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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1042 O.G. 45 on May 15, 1984.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced in the *Official Gazette* at 1039 O.G. 142 on Feb. 21, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Apr. 13, 1984. *Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (1), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Nov. 24, 1981 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	4,793 through 4,795
Utility Patents	4,301,544 through 4,302,846

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six mo nths are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f))	$ 200.00
By other than a small entity	$ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f))	$ 50.00
By other than a small entity	$ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . $ 500.00"

Board of Appeals Decisions Rendered in the Month of Oct. 1984

Affirmed	186
Affirmed in Part	24
Reversed	74
Total	284

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

3,517,899, Re. S.N. 648,184, Filed Sept. 6, 1984, Cl. 186/040, UNITIZED AIRCRAFT FOOD AND BEVERAGE SERVICE, Richard I. Vernon, Owner of Record: *Lockheed Aircraft Corp., Burbank, Calif.*, Attorney or Agent: Billy G. Corber, Ex. Gp.: 311

4,051,540, Re. S.N. 629,314, Filed July 26, 1984, Cl. 360/72.3, INSTRUCTION INDICATING APPARATUS FOR A RECORD AND/OR PLAYBACK DEVICE, Leslie N. Wilder, et al., Owner of Record: *P.B. Holding Corp., Rye, N.Y.*, Attorney or Agent: Arthur V. Smith, et al., Ex. Gp.: 235

4,093,999, Re. S.N. 650,242, Filed Sept. 13, 1984, Cl. 364/900, ELECTRONIC FRANKING MACHINES, Paul Fuller, et al., Owner of Record: *Vickers Ltd., Lon-*

don, England, Attorney or Agent: Roberts B. Larson, et al., Ex. Gp.: 237

4,173,571, Re. S.N. 632,152, Filed July 18, 1984, Cl. 549/264, 13-HALO AND 13-DEOXY DERIVATIVES OF C-076 COMPOUNDS, John C. Chabala, et al., Owner of Record: *Merck & Co., Inc., Rahway, N.J.,* Attorney or Agent: Mario A. Monaco, Ex. Gp.: 129

4,220,533, Re. S.N. 590,276, Filed Aug. 13, 1984, Cl. 210/223, LIQUID-SEPARATING DEVICE, Harold J. Baer, et al., Owner of Record: *Harold J. Baer, et al.,* Attorney or Agent: Glenn B. Morse, Ex. Gp.: 176

4,291,794, Re. S.N. 643,235, Filed Aug. 22, 1984, Cl. 192/107.4, POWER TRANSMISSION AND ENERGY ABSORBING SYSTEMS, Dieter W. Bauer, Owner of Record: *B. F. Goodrich Co., Inc., New York, N.Y.,* Attorney or Agent: James E. Brunton, Ex. Gp.: 352

4,314,722, Re. S.N. 578,075, Filed Feb. 8, 1984, Cl. 292/263, TIMING APPARATUS FOR DELAYING OPENING OF DOORS, Emanuel L. Logan, Jr., Owner of Record: *Reliable Security Systems, Inc., Columbus, Ohio,* Attorney or Agent: Leonard Bloom, Ex. Gp.: 355

4,332,431, Re. S.N. 615,633, Filed May 31, 1984, Cl. 339/74R, PREASSEMBLED ELECTRICAL CONNECTOR, Clifford F. Bobb, et al., Owner of Record: *Toagosu Chemical Industy, Tokyo, Japan,* Attorney or Agent: Donald M. Boles, Ex. Gp.: 322

4,340,655, Re. S.N. 646,195, Filed Aug. 31, 1984, Cl. 430/014, THERMAL AND MECHANICAL BARRIER LAYERS FOR OPTICAL RECORDING ELEMENTS, Kenneth R. Hollister, et al., Owner of Record: *Eastman Kodak Co., Rochester, N.Y.,* Attorney or Agent: John R. Everett, et al., Ex. Gp.: 156

4,343,082, Re. S.N. 641,849, Filed Aug. 17, 1984, Cl. 029/576B, METHOD OF MAKING CONTACT ELECTRODES TO SILICON GATE, AND SOURCE AND DRAIN REGIONS, OF A SEMICONDUCTOR DEVICE, Martin P. Lepselter, Owner of Record: *Bell Telephone Laboratories, Inc., Murray Hill, N.J.,* Attorney or Agent: S. E. Hollander, et al., Ex. Gp.: 114

4,346,972, Re. S.N. 644,997, Filed Aug. 28, 1984, Cl. 354/195, CAMERA EQUIPPED WITH AN AUTOMATICALLY CONTROLLING DEVICE FOR FOCUSING AND SHUTTER OPERATION, Tamotsu Takahashi, Owner of Record: *Copal Co. Ltd., Tokyo-To, Japan,* Attorney or Agent: Paul N. Kokulis, et al., Ex. Gp.: 211

4,348,107, Re. S.N. 642,870, Filed Aug. 21, 1984, Cl. 356/072, ORIFICE INSIDE OPTICAL ELEMENT, Robert C. Leif, Owner of Record: *Coulter Electronics, Inc., Hialeah, Fla.,* Attorney or Agent: Stephen A. Roen, et al., Ex. Gp.: 255

4,349,260, Re. S.N. 649,308, Filed Sept. 11, 1984, Cl. 354/145, AUTOMATIC ELECTRONIC FLASH DEVICE PRODUCING PRELIMINARY FLASH LIGHT AND PRIMARY FLASH LIGHT, Tokuji Ishida, et al., Owner of Record: *Minolta Camera Kabushiki Kaisha, Osaka, Japan,* Attorney or Agent: Walter D. Ames, et al., Ex. Gp.: 211

4,349,729, Re. S.N. 645,032, Filed Aug. 27, 1984, Cl. 235/400, DISCRIMINATORY HIT DETECTION IN TARGET APPARATUS, Lindsay C. Knight, Owner of Record: *Australasian Training Aids, Pty. Ltd., Albury, Australia,* Attorney or Agent: Arthur Schwartz, et al., Ex. Gp.: 234

4,359,129, Re. S.N. 650,268, Filed Sept. 13, 1984, Cl. 180/268, MOTORCYCLE SAFETY-RELEASE BACK REST, Gregory K. Schultz, Owner of Record: *Inventor,* Attorney or Agent: John F. Learman, et al., Ex. Gp.: 316

4,361,033, Re. S.N. 613,307, Filed May 23, 1984, Cl. 073/64.4, METHOD FOR SELECTING AN ADDITIVE FOR ELECTRICAL CONTACTS, Han J. Kim, et al., Owner of Record: *GTE Laboratories, Inc.,* Attorney or Agent: James Theodosopoulos, Ex. Gp.: 265

4,365,331, Re. S.N. 645,566, Filed Aug. 30, 1984, Cl. 370/041, MULTIPLE CHANNEL DATA COMMUNICATION SYSTEM, Kenneth J. Biba, et al., Owner of Record: *Sytek Corp., Sunnyvale, Calif.,* Attorney or Agent: Thomas E. Schatzel, Ex. Gp.: 263

4,372,793, Re. S.N. 645,339, Filed Aug. 29, 1984, Cl. 156/066, METHOD OF JOINING FLEXIBLE FASTENER STRIPS TO FLEXIBLE WEB, AND FLEXIBLE FASTENER STRIP FOR THIS PURPOSE, Andre M. Herz, Owner of Record: *Minigrip, Inc., Orangeburg, N.Y.,* Attorney or Agent: James Van Santen, et al., Ex. Gp.: 131

4,383,424, Re. S.N. 632,887, Filed July 20, 1984, Cl. 062/476, REDUCTION OF SUPERHEATING, Isaih Vardi, et al., Owner of Record: *Eshel Residual Energy for Cooling and Heating Ltd., Azor, Israel,* Attorney or Agent: Martin Fliet, et al., Ex. Gp.: 344

4,389,736, Re. S.N. 649,212, Filed Sept. 4, 1984, Cl. 002/328, TOOL BELT SUSPENDERS, Norman L. Clifton, Owner of Record: *Inventor,* Attorney or Agent: Thomas E. Schatzel, Ex. Gp.: 247

4,392,510, Re. S.N. 641,009, Filed Aug. 15, 1984, Cl. 137/454.2, CONTROL VALVE FOR VISCOUS MATERIAL PUMPS, Horst Heckmann, et al., Owner of Record: *Friedrich H. Schwing, Herne, West Germany,* Attorney or Agent: Harold J. Kinney, et al., Ex. Gp.: 341

4,400,374, Re. S.N. 643,142, Filed Aug. 22, 1984, Cl. 424/078, CONTROLLED RELEASE OF COMPOUNDS UTILIZING A PLASTIC MATRIX, Nathan F. Cardarelli, Owner of Record: *Environmental Chemicals, Inc., Wauconda, Ill.,* Attorney or Agent: William M. Lee, et al., Ex. Gp.: 125

4,422,519, Re. S.N. 643,411, Filed Aug. 22, 1984, Cl. 180/219, MOTORCYCLE ENGINE EXHAUST SYSTEM, Kazuhiko Nomura, et al., Owner of Record: *Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka, Japan,* Attorney or Agent: Ernest A. Beutler, Ex. Gp.: 211

4,433,090, Re. S.N. 648,842, Filed Sept. 6, 1984, Cl. 524/295, VISCOSITY MODIFIERS FOR ACRYLAMIDE POLYMER, Donald N. Van Eenam, Owner of Record: *Monsanto Co., St. Louis, Mo.,* Attorney or Agent: Michael C. Schiffer, et al., Ex. Gp.: 155

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,910,349, Reexam. No. 90/000,647, Requested: Oct. 12, 1984, Cl. 166/153, APPARATUS AND METHOD FOR CEMENTING WALL LINERS, Joe R. Brown, et al., Owner of Record: *Hughes Tool Co., Houston, Tex.,* Attorney or Agent: R. A. Felsman, Ex. Gp.: 350, Requester: Otis Engineering Corp., Dallas, Tex.

3,934,652, Reexam. No. 90/000,657, Requested: Oct. 29, 1984, Cl. 166/285, APPARATUS AND METHOD FOR CEMENTING WELL LINERS, Chudleigh B. Cochran, Owner of Record: *Hughes Tool Co., Houston, Tex.,* Attorney or Agent: R. A. Felsman, Ex. Gp.: 350, Requester: Otis Engineering Corp., Dallas, Tex.

4,064,744, Reexam. No. 90/000,653, Requested: Oct. 18, 1984, Cl. 73/66, STRAIN SENSOREXTENSIO-

METER, Walter P. Kistler, Owner of Record: *Kistler-Morse Corp., Bellevue, Wash.*, Attorney or Agent: Seed, et al., Ex. Gp.: 260, Requester: Oblon, et al., Arlington, Va.

4,101,703, Reexam. No. 90/000,655, Requested: Oct. 24, 1984, Cl. 428/216, COATED CEMENTED CARBIDE ELEMENTS, Wilfried Schintlmeister, Owner of Record: *Schwarzkopf Development Corp., New York, N.Y.*, Attorney or Agent: Morgan, et al., Ex. Gp.: 150, Requester: Leydig, et al., Chicago, Ill.

4,319,576, Reexam. No. 90/000,656, Requested: Oct. 24, 1984, Cl. 128/305, INTRALUMENAL ANASTOMOSIS SURGICAL STAPLING INSTRUMENT, Robert G. Rothfuss, Owner of Record: *Senmed, Inc., Cincinnati, Ohio*, Attorney or Agent: Frost & Jacobs, Ex. Gp.: 336, Requester: Senmed, Inc., Cincinnati, Ohio

4,424,033, Reexam. No. 90/000,658, Requested: Oct. 29, 1984, Cl. 433/20, ORTHODONTIC APPLIANCE, Arthur L. Wool, Owner of Record: *Inventor*, Attorney or Agent: George A. Smith, Jr., Ex. Gp.: 333, Requester: Arthur L. Wool, Wyomissing, Pa.

Notice to Patent Owners and Parties Responsible for Paying Maintenance Fees Concerning Fee Address and Payor Number

37 CFR 1.363, effective Nov. 1, 1984, provides for a "fee address" to be entered in the Office patent file records for use in all correspondence relating to maintenance fees. The "fee address" is in addition to the "correspondence address" under 37 CFR 1.33 which will continue to be used for all reexamination and interference purposes. If no separate "fee address" is specified, the "correspondence address" will also be used for maintenance fee correspondence.

In order to simplify changes in address by patent owners having several patents, and data input by the Patent and Trademark Office, a "payor number" will be assigned to each "fee address" when a "fee address" is presented to the Office in a patent or earlier upon request. A request for a "payor number" before a maintenance fee is paid or due will permit a patent owner to request that the "fee address" or "payor number" be recorded in the Office records of the patents owned on which maintenance fees are due so that all notices relating to maintenance fees will be sent to the "fee address".

The Patent and Trademark Office has established a procedure for assigning a "payor number" upon request by a patent owner or a party responsible for paying maintenance fees. Such a party may be, for example, the finance office of a corporation or of a separate organization specializing in maintenance fee payments. Under the procedure, a patent owner or other party may request a "payor number" for a particular "fee address" by writing to: Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231. Each request for a "payor number" should include:

— the "fee address" to be used by the Office, and
— the telephone number of the fee addressee to be used to resolve problems.

After receipt of a "payor number", it may be used to indicate to the Patent and Trademark Office the "fee address" to be used in particular patents on which maintenance fees will become due and in applications in which issue fees have been or are being paid. Any request for entry of a "payor number" or "fee address" in the Office records of a patent, however, must be signed by the patent owner or his or her attorney or agent of record.

After a "payor number" has been assigned, it should be used in all future maintenance fee payments and related correspondence. However, where a "payor number" has not been previously entered in the Office records for a patent, the mere indication of a "payor number" at the time of payment of the maintenance fee, without the signature of the patent owner or the owner's attorney or agent of record, will not serve to make the "payor number" of record in the Office for that patent.

THERESA A. BRELSFORD,
Oct. 19, 1984. *Assistant Commissioner for Administration.*

Removal From Register

Pursuant to the provisions of 37 C.F.R. §1.347, a letter was directed on Sept. 25, 1984, to Mr. Ralph M. Flygare at 14201 Wyandotte St., Van Nuys, Calif. 91405, the last post office address furnished by him to the Office of Enrollment and Discipline. No reply was received within the period of thirty days therein set. Accordingly, his name has been removed from the Register of Agents effective Oct. 26, 1984.

WILLIAM FELDMAN,
Nov. 5, 1984. *Director, Office of Enrollment and Discipline.*

Status of PTO Services

The following is an update of the status of PTO services for October 1984:

Service Item	FY 1985 Performance Goal (Calendar Days)	Monthly Average	Comment
Filing Receipts:			
Patents	22	36	Due to automation problems and faulty printing of new forms.
Trademarks	30	24	
Patent/Trademark Copies:			
Window Coupons	5	95% within 5 days	
Mail Coupons	29	99% within 29 days*	
Letter Orders	34	99% within 34 days*	
Date of oldest unfilled order		October 19, 1984	
Certified Copies:			
Trademark Registrations	30	20	
Status Copies (excluding title)	15	99% within 15 days	
Applications-As-File d	20	99% within 7 days	
File-Wrapper/Contents	N/A	99% within 7 days	
Walk-up Certification	1	99% within 24 hours	
Trademark Search Library:			
Filing Drawings	21	18	
Filing Reg. Certificates	3	9	
Assignments:			
Patents	25	17	
Trademarks	25	16	
Avg. Days from Issue Fee Payment to Issue Date	90–100	88	
Patent Official Gazette:			
In Bookstore	Issue Date	On schedule	
Mailed	Issue Date	Avg. 1 day late	
Patent Grants Mailed	Issue Date	Avg. 1 day late	
Patent Copies Available	Issue Date	94% on issue date	
Trademark Copies Available	Issue Date	99% on issue date	
Trademark Official Gazette:			
In Bookstore	Issue Date	On schedule	
Mailed	Issue Date	On schedule	
Trademark Regs. Mailed	Issue Date	On schedule	

*Figures include postal processing and delivery time.

USER SURVEY

A 1984 User Survey was recently conducted to determine the public perception of the adequacy of services provided by the Patent and Trademark Office in comparison to established goals and to identify the principle areas of concern.

A similar survey was conducted in Jan. 1982. The 1984 survey was distributed to the same groups as the 1982 survey to facilitate comparison. Those groups included the local, Cleveland, and Los Angeles Bar Associations and local Patent Search Room users. There were 271 respondents to the 1984 survey.

A summary comparison of how items were rated in each survey is as follows:

	1982	1984
Positive	21	35
Negative	27	12

All items were rated more positively in the 1984 User Survey. In the 1982 survey, all items relating to the timeliness of services were rated negatively (poor or fair). In the 1984 survey, all of these items went up at least 20 percentage points. The most dramatic improvements were the following:

Timeliness of providing certified copies of trademark applications (+43 points)

Timeliness of providing certified copies of trademark registrations (+40 points)

Timeliness of providing certified copies of assignments (+38 points)

Timeliness of providing trademark file histories (+38 points)

Patent Search Room working conditions (+38 points)

Helpfulness of Assignment Search Room employees (+38 points)

In addition to the above, high positive ratings were given to:

Quality of service received f walk-up window (91%)

Legibility of serial number on applicants' self-addressed post cards (88%)

Completeness of all certified copy requests (80%)

Legibility of all certified copy requests (80%)

Helpfulness of walk-up certification employees (78%)

Quality of service rendered by Search Advisors (77%)

Value of computerized search tools (72%)

Timeliness of returning applicants' self-addressed cards (70%)

Even though all ratings showed improvements, negative ratings still exist for the following:

Integrity of classified search files
Timeliness of official search notifications
Quality of microfilm reader/printers
Timeliness of providing patent and trademark copies
Timeliness of providing patent file histories
Integrity of assignment card files
Helpfulness of official search employees

An i tem not included in the 1982 survey, but added to the 1984 survey, received th e most negative rating — success in locating files through official searches.

An FY 1985 action plan has been developed to address those items with negative ratings. Another special objective for this coming year is to try to reduce the goal levels.

RELOCATION OF THE FILE INFORMATION UNIT

The File Information Unit (Record Room) was relocated to the Lobby level of Crystal Plaza Bldg. 3 on Oct. 22, 1984. File security and other operational requirements dictated the need for the move. Entry to the Unit is at the north end of the file stacks in the Patent Public Search Room.

THERESA A. BRELSFORD
Nov. 5, 1984. *Assistant Commissioner for Administration.*

PATENT NOTICES

Certificates of Correction for the Week of Nov. 27, 1984

D. 268,948	4,413,175	4,436,997	4,452,868
4,118,129	4,414,457	4,437,997	4,454,413
4,182,777	4,414,466	4,438,925	4,454,682
4,183,624	4,417,019	4,440,944	4,454,860
4,243,818	4,420,617	4,441,527	4,455,294
4,289,886	4,421,951	4,443,427	4,455,416
4,308,306	4,422,880	4,443,933	4,456,067
4,336,427	4,424,292	4,444,648	4,456,554
4,342,440	4,425,359	4,445,078	4,456,964
4,355,135	4,426,657	4,445,756	4,457,377
4,371,047	4,427,416	4,445,875	4,457,478
4,377,060	4,429,173	4,446,113	4,457,560
4,377,676	4,429,257	4,446,220	4,459,101
4,378,844	4,429,260	4,446,241	4,459,317
4,380,408	4,429,289	4,446,868	4,459,397
4,382,030	4,429,476	4,447,008	4,459,467
4,389,331	4,429,933	4,447,277	4,459,504
4,392,707	4,430,200	4,447,665	4,460,631
4,397,017	4,430,339	4,448,258	4,460,968
4,397,388	4,430,557	4,448,460	4,461,052
4,397,645	4,431,032	4,449,573	4,461,322
4,398,972	4,431,495	4,450,562	4,461,835
4,399,835	4,432,028	4,450,630	4,462,182
4,403,298	4,433,306	4,450,865	4,462,796
4,405,146	4,434,532	4,450,947	4,462,858
4,406,423	4,434,942	4,451,476	4,462,900
4,407,054	4,435,808	4,452,178	4,464,029
4,411,877	4,436,629	4,452,804	4,464,261

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
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	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
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North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
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	Cleveland Public Library	(216) 623-2870
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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF October 1, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	6-18-82
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	9-29-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	6-15-82
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	6-19-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—B. R. GRAY, Director	9-24-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	6-29-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	2-22-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	10-28-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	5-09-80
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	4-07-82
DESIGN, GROUP 290—K. L. CAGE, Director	5-02-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—(Vacant)	9-01-82
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	9-30-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	6-08-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	8-25-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	12-04-81

Expiration of patents: The patents within the range of numbers indicated below expire during October 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,344,433 to 3,350,717, inclusive

Plant Patents ..... Numbers 2,770 to 2,774 inclusive

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,745

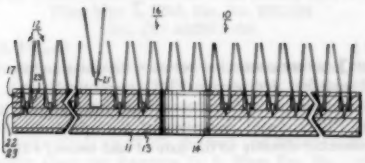
COMPOSITE BRUSH

Franklin D. Pichelman, Minnetonka, Minn., assignor to Flo-Pac Corporation, Minneapolis, Minn.

Original No. 4,305,234, dated Dec. 15, 1981, Ser. No. 118,508, Feb. 4, 1980. Application for reissue Sep. 30, 1982, Ser. No. 431,305

Int. Cl.[3] **B24D** *13/14;* **A46B** *9/06*

U.S. Cl. 51—330 **4 Claims**



3. A floor maintenance brush for cleaning and buffing a floor, the brush having a circularly-shaped base plate with a centrally located hole for attachment to a rotary floor maintenance machine, the baseplate having a plurality of tuft-receiving cavities formed in one side thereof, and a plurality of tuft units attached respectively in said cavities and forming a flat, substantially homogeneous brush face across the base plate, each tuft unit comprising a fairly uniformly intermingled mixture of substantially absorbent, substantially nonabrasive tampico bristles and substantially nonabsorbent, substantially abrasive nylon bristles having abrasive particles impregnated therein.

Re. 31,746

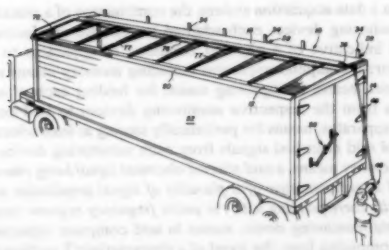
ROLL-UP TARP FOR TRAILERS

Jerry R. Dimmer, Mooreton, and William J. Shorma, Wahpeton, both of N. Dak., assignors to Wahpeton Canvas Company, Inc., Fargo, N. Dak.

Original No. 4,302,043, dated Nov. 24, 1981, Ser. No. 142,373, Apr. 18, 1980. Application for reissue Sep. 9, 1982, Ser. No. 416,116

Int. Cl.[3] **B60J** *11/00*

U.S. Cl. 296—98 **32 Claims**



14. A cover assembly for an elongated body defining an elongated opening, comprising:

a flexible covering material having a longitudinal dimension approximately corresponding to the longitudinal dimension of said opening and having a lateral dimension greater than the lateral dimension of said opening;

means attaching one longitudinal edge of said covering material adjacent one longitudinal edge of said opening;

a bar member connected to the covering material adjacent the other longitudinal edge of the covering material;

crank means operatively connected to one side of said bar member for rolling said bar member transversely of said body for rolling or unrolling said covering material;

resilient means, one end of said resilient means being attached to said bar member on the opposite side of said bar member, the other end of said resilient means being attached to said body, said resilient means extending over said body when said covering material is in a rolled condition to expose said opening, and said resilient means applying tension to said bar member during unrolling of the covering material as said opening is being covered, and;

latching means supported on said body on the side of said body opposite the side defining said one longitudinal edge of said opening, said latching means serving to secure said covering material in place when said opening is covered;

and wherein said crank means and said resilient means cooperate to secure said covering material relative to said latching means.

Re. 31,747

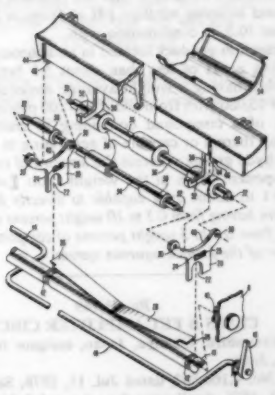
PAPER FEED ROLLER ASSEMBLY FOR A TYPEWRITER OR PRINTER

Iraj D. Shakib, and Krikor Yosmali, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Original No. 4,364,683, dated Dec. 21, 1982, Ser. No. 333,958, Dec. 23, 1981. Application for reissue May 31, 1983, Ser. No. 499,742

Int. Cl.[2] **B41J** *13/036, 13/16*

U.S. Cl. 400—637 **3 Claims**



1. A manually insertable and removeable paper feed roll device for a printer having a rotatable platen, a frame comprising a frame having sides and at least a rail extending therebetween and a release bail capable of operator movement away from said platen, comprising:

a paper deflector support;

a paper deflector;

a plurality of feed rolls, said feed rolls having a periphery extending through said paper deflector for engagement of said platen;

support means for maintaining said feed rolls in spaced relation to each other;

said paper deflector support supportable on said support means and moveable thereon;

said paper deflector support further comprising retraction and retention means for engaging said release bail to retract said paper deflector support upon movement of said release bail;

spring means engageable with said rail and biasingly engaged with said support means, whereby said device is manually insertable into said printer and retained therein by said retention means [engaging said release bail,] and said support means are biased to engage said feed rolls with said platen when said release bail is disengaged from said retraction [and retention] means.

Re. 31,748

VISCOSIFIER AND FLUID LOSS CONTROL SYSTEM

Jacob Block, Rockville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Original No. 4,349,443, dated Sep. 14, 1982, Ser. No. 239,079, Feb. 27, 1981. Continuation-in-part of Ser. No. 169,884, Jul. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 141,852, Apr. 21, 1980, abandoned, which is a continuation-in-part of Ser. No. 121,226, Feb. 13, 1980, abandoned. Application for reissue Dec. 2, 1982, Ser. No. 446,217

Int. Cl.[3] **C07K** *7/02*

U.S. Cl. 252—8.5 A **12 Claims**

1. A composition capable of imparting to clay-free aqueous sytems a combination of pseudoplasticity and fluid loss control comprising a mixture of:

(a) a hydroxy containing aluminum component formed by mixing in an aqueous medium and under a high degree of agitation a water-soluble basic agent selected from the group consisting of an alkali metal aluminate, alkali metal hydroxide, ammonium hydroxide and mixtures thereof with a water-soluble acidic agent selected from an inorganic acid, aluminum chloride, aluminum sulfate, aluminum nitrate, their hydrates and mixtures thereof; at least one of said basic and acidic agents being an aluminum containing compound; said acidic and basic agents being reacted in a ratio such that the resultant product imparts to said aqueous medium pH of from at least about 8 to about 10.3; in combination with

(b) a reaction product formed in an aqueous acidic medium having a pH of less than about 5.5 between polyvinyl alcohol having a weight average molecular weight of at least 20,000 with from about 1 to 200 percent of stoichiometry of a compound containing at least one aldehyde group therein or capable of generating in situ at least one aldehyde group; wherein the amount of component (a) to component (b) is in the weight ratio [of at least about 0.75:1 to about 3:1] *capable to directly form an aqueous system having from 0.5 to 10 weight percent of component (a) and from 0.3 to 5 weight percent of component (b) based on water of the formed aqueous system.*

Re. 31,749

CLASS B FET AMPLIFIER CIRCUIT

Osamu Yamashiro, Ohmiya, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Original No. 4,100,502, dated Jul. 11, 1978, Ser. No. 719,238, Aug. 31, 1976. Application for reissue Jul. 11, 1980, Ser. No. 168,777

Claims priority, application Japan, Sep. 3, 1975, 50-105919

Int. Cl.[3] **H03F** *3/16, 3/26*

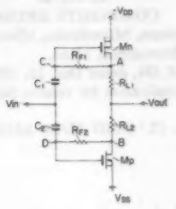
U.S. Cl. 330—264 **16 Claims**

7. [The] *An* amplifier circuit [according to claim 5, further comprising] *comprising, in combination, first and second operating voltage terminals of different potential level;*

first and second FETs of complementary conductivity type, each having a source, a gate and a drain, the sources of said complementary FETs being connected to said first and second operating voltage terminal respectively, the gates of said complementary FETs being ac-coupled to an input terminal;

a resistor connected between the drains of said complementary FETs, the connection between said resistor and at least one of said complementary FETs serving as an output terminal; and

bias means for applying the gates of said complementary FETs with bias voltages which have different potentials, wherein said bias means includes a first and a second biasing [resistors] *resistor* connected between the gates and the drains of said first and second FETs respectively, and an ac coupling capacitor connected between the gate of said first FET and said input terminal, the input terminal being connected directly to the gate of said second FET.



Re. 31,750

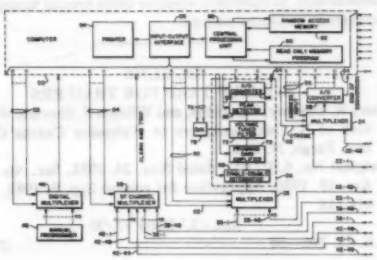
DATA ACQUISITION SYSTEM

Robert S. Morrow, Dublin, Ohio, assignor to IRD Mechanalysis, Inc., Columbus, Ohio

Original No. 4,184,205, dated Jan. 15, 1980, Ser. No. 854,939, Nov. 25, 1977. Application for reissue Jan. 25, 1982, Ser. No. 342,159

Int. Cl.[3] **G06F** *15/34*

U.S. Cl. 364—508 **20 Claims**



1. In a data acquisition system, the combination of a plurality of monitoring devices each adapted to produce an electrical signal indicative of a physical condition of apparatus to be monitored, computer apparatus including memory means and print-out means, multiplexing means for feeding each of said signals from the respective monitoring devices to said computer apparatus, means for periodically storing at least selected ones of said electrical signals from each monitoring device in said memory means, *a said selected electrical signal being characterized as representative of a plurality of signal amplitudes substantially corresponding with the entire frequency response range of a said monitoring device,* means in said computer apparatus for [computing from the trend of a characteristic] *performing a trend analysis on the basis of historical data consisting of said representative amplitudes* of the stored electrical signals from each monitoring device *wherein* the probable time to failure of the monitored apparatus from which those signals were derived[,] *is computed, said trend analysis being performed on the basis of a predetermined restricted number of said stored signals* and [means responsive to said determining means] *said computer apparatus including means* for causing said print-out means to print indicia indicative of the probable time to failure.

PLANT PATENTS

GRANTED NOVEMBER 27, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,356

MINIATURE ROSE PLANT—MINACO

Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208

Filed May 5, 1983, Ser. No. 492,018

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, much branched habit, substantially as illustrated and described, characterized by buds and flowers of a mauve or lavender color, being of a shade generally near Lilac Purple 031/1 to 031/2, the bud and flower resembling the variety Over the Rainbow (U.S. Plant Pat. No. 3,472) in form and size but having more petals; and further characterized by a plant of vigorous and compact growth habit, easy to propagate from cuttings, with an abundance of flowers borne usually one to the stem.

5,357

MINIATURE ROSE PLANT—MINCCO

Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208

Filed May 5, 1983, Ser. No. 491,762

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, upright, much branched habit, substantially as illustrated and described, characterized by buds and flowers of a deep pink and white bi-color, being of a shade generally near Tyrian Rose 24 to Tyrian Rose 24/2 (or similar), on the top surface and near white on reverse, the bud and flower resembling the variety Toy Clown (Plant Pat. No. 2,909) in form and size but having more petals; and further characterized by a plant of vigorous and compact growth habit, easy to propagate from cuttings, with an abundance of flowers borne usually one to the stem.

5,358

MINIATURE ROSE PLANT—MINBCO

Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208

Filed May 5, 1983, Ser. No. 491,763

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—8 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, upright to slightly spreading, much branched habit, substantially as illustrated and described, characterized by buds and flowers of a clear medium to deep yellow color, being of a shade generally near Lemon Yellow 4/1 or lighter, the bud and flower resembling the variety Calgold (U.S. Plant Pat. No. 4,230) in form and color but smaller in size and having more petals; and further characterized by a plant of vigorous and compact growth habit, easy to propagate from cuttings, with an abundance of flowers borne usually one to the stem.

5,359

GOLDEN SYCAMORE

Dave Howard, Rte. 1, Box 421, Burgaw, N.C. 28425

Filed Apr. 8, 1983, Ser. No. 465,874

Int. Cl.[3] A01H *5/12*

U.S. Cl. Plt.—51 **1 Claim**

1. The Sycamore (*Platanus occidentalis*) tree herein described characterized by the lemon yellow color of its leaves and a slower growth rate.

PATENTS

GRANTED NOV. 27, 1984

ERRATA

For CLASS	See PATENT NO.
446–487	4,484,406
446–122	4,484,407
446–299	4,484,408
384–537	4,484,786
335–301	4,484,814
502–115	4,485,035
534–637	4,485,041
534–976	4,485,042
427–087	4,485,094
544–325	4,485,248

PATENTS

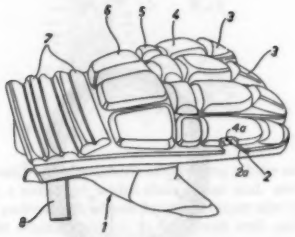
GRANTED NOV. 22, 1966

PATENTS

GRANTED NOVEMBER 27, 1984

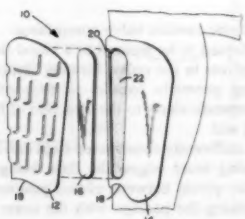
GENERAL AND MECHANICAL

4,484,359
PADDED GLOVE
Juha Tirinen, Helsinki, Finland, assignor to Yoko-team Oy, Forssa, Finland
Filed May 31, 1983, Ser. No. 499,323
Claims priority, application Finland, Jan. 28, 1983, 830301
Int. Cl.³ A41D *13/08*
U.S. Cl. 2—20 **12 Claims**



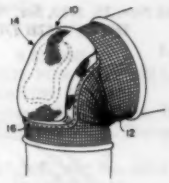
1. A protective glove back portion having an exposed outer surface and an inner surface adapted to be applied to the outer back surface of an ordinary glove for protecting the back of the wearer's hand including a unitary moulded body of energy-absorbing material comprising a relatively thin flexible base extending over the back of the finger and knuckle and metacarpal and wrist areas of the hand and a plurality of discrete energy-absorbing protrusions integral with said base and projecting outwardly therefrom in said areas, said body being homogeneous throughout said base and said protrusions from said inner surface to said exposed outer surface.

4,484,360
SHIN GUARD AND METHOD OF MAKING
Kenneth B. Leighton, Solon, and Michael J. Silvestro, Stow, both of Ohio, assignors to Spectrum Sports, Inc., Twinsburg, Ohio
Filed Oct. 13, 1983, Ser. No. 541,430
Int. Cl.³ A41D *13/00, 13/06*
U.S. Cl. 2—22 **8 Claims**



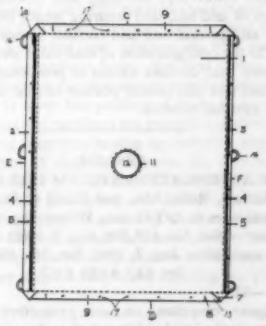
2. A shin guard comprising a rigid outer shell, a foam backing bonded to said shell, and a dense modified polyurethane insert bonded to said backing, said insert being received in a recess formed in said backing, said insert also being disposed between said backing and said outer shell.

4,484,361
KNEE AND ELBOW PAD AND METHOD OF MAKING
Kenneth B. Leighton, Solon, and Michael J. Silvestro, Stow, both of Ohio, assignors to Spectrum Sports, Inc., Twinsburg, Ohio
Filed Oct. 13, 1983, Ser. No. 541,703
Int. Cl.³ A41D *13/00, 13/06*
U.S. Cl. 2—24 **12 Claims**



1. An elbow or knee pad comprising a pad assembly having a foam backing with a recess and a dense, modified polyurethane insert in said recess, said backing being a polyurethane foam, and said dense modified polyurethane insert being formed of a non-cellular polyurethane of essentially linear structure containing unsatisfied hydroxyl groups, having a compression set of less than 15% and elongation at break of at least 500%, and a recovery which is delayed after compression by at least 0.7 seconds.

4,484,362
MULTI-PURPOSE OUTERWEAR
Ron E. Asher, 1620 Dearborn Dr., Virginia Beach, Va. 23451
Filed May 21, 1980, Ser. No. 152,027
Int. Cl.³ A41B *1/12*
U.S. Cl. 2—69 **2 Claims**



2. A multi-purpose outerwear garment comprising a rectangular sheet of waterproof pliable material having a head opening centrally located therein, first fastening means along each longer side of said sheet to cooperate with each other to secure each longer side to the other over a selectable length, second fastening means along each longer side of said sheet to cooperate with each other to attach one of said longer sides to the other to form a weatherguard for said first fastening means or to selectively attach a longer side of said sheet to a longer side of at least an additional sheet, third fastening means along each shorter side of said sheet to selectively connect each shorter side of said sheet to itself or to a shorter side of at least one additional sheet, loops along each edge of said longer sides to receive poles when using the garment as a stretcher, means

comprising a cord-like element in a sleeve on each of said shorter sides for compressively decreasing the length of said shorter side selectively and a hood element secured to said head opening, the hood element have draw cord means for closing a face opening in said hood element about the face of a wearer and for selective closing of said head opening by pulling said draw cord means tightly to close the face opening and then tieing the draw cord means about the hood element.

4,484,363

COMBINATION HAT AND COOLING DEVICE

Teresa E. Varanese, 1555 Mesa Verde E., No. 49-L, Costa Mesa, Calif. 92626

Filed Nov. 25, 1983, Ser. No. 554,966
Int. Cl.³ A42B 1/06
U.S. Cl. 2—209.1 **7 Claims**

1. A hat in combination with a coolant means, comprising:
a hat having at least a front crown section to cover the forehead and the frontal portion of the head of an individual;
an enclosure defining an inverted pocket formed having a triangular configuration, the apex thereof being secured to the upper portion of said front crown section, and the base portion thereof in which said opening is disposed being secured to the lower peripheral edge of said hat;
a coolant means containing a liquid adapted to be freezable to a thixotropic and pliable state, wherein said coolant means is shaped to be received and stored in said pocket; and
means for removably securing said pocket to said front section of said hat, said securing means being arranged to cause said pocket and said coolant means therein to conform to the configuration of said front section of said hat, whereby said coolant means is positioned adjacent said forehead and said frontal portion of said individual's head when said hat is worn.

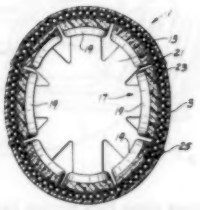
4,484,364

SHOCK ATTENUATION SYSTEM FOR HEADGEAR

Hal D. Mitchell, Rolla, Mo., and David C. Rust, Sacramento, Calif., assignors to A-T-O Inc., Willoughby, Ohio

Continuation of Ser. No. 185,208, Sep. 8, 1980, abandoned. This application Jan. 7, 1983, Ser. No. 456,354
Int. Cl.³ A42B 3/02
U.S. Cl. 2—413 **21 Claims**

1. Headgear comprising an outer protective shell, a suspension system on the inside of the shell at the crown of the shell for protecting the top of the head, and a shock attentuation system around the inside of the shell for protecting the front, back and sides of the head, said system including a liner comprising a series of relatively long slender open-ended tubes of elastomeric material disposed in generally parallel side-by-side relation, and means for securing the liner on the inside of the shell with the longitudinal axes of the tubes generally parallel to the internal surface of the shell, said tubes being elastically deformable under loads applied against the sides thereof and being spaced sufficiently close to one another that when one tube deforms under a load it is engageable with the sides of adjacent tubes for deforming them whereby when the headgear is worn by a wearer and subjected to an impact load, the sides of the tubes in the area of impact deform elastically under the load into engagement with the sides of adjacent tubes and thereby deform the adjacent tubes for attenuating the shock on the wearer, said tubes being distributed over a relatively large



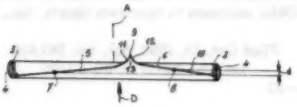
portion of the inside of the shell from adjacent the bottom of the shell to adjacent said crown suspension system for protecting the front, back and sides of the head.

4,484,365

FLAP-TYPE PROSTHETIC HEART VALVE

Robert F. Murguet, 4 rue de Constantine, Lyon 1, and Joelle M. J. Lugarini-Tardy, 11 Residence du Val, Palaiseau, Essone, both of France

Filed Nov. 1, 1982, Ser. No. 438,287
Claims priority, application France, Nov. 5, 1981, 81 20898
Int. Cl.³ A61F 1/22
U.S. Cl. 3—1.5 **9 Claims**



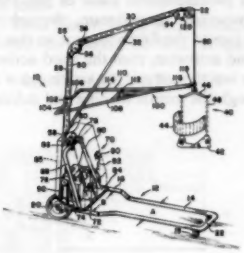
1. A prosthetic cardiac valve comprising:
a collar adapted to be secured in a blood-flow passage;
a pair of pivots in the collar forming respective pivot axes extending generally parallel to each other and spaced apart perpendicularly to the direction of flow through the passage; and
respective differently constructed flaps carried on the pivots and having inner edges, the flaps being pivotal on the respective pivots between closed positions transverse to and blocking the passage with the inner edges touching and lying between the respective pivot axes and open positions extending generally parallel to the flow direction downstream from the respective pivots, one of the flaps being constructed so that when moved by flow in the passage out of the closed position it diverts flow in the passage at the other flap to move same into the open position.

4,484,366

INVALID TRANSFER DEVICE

Curtis A. Koontz, 57768 Oakside Ave., Mishawaka, Ind. 46544

Filed Mar. 18, 1983, Ser. No. 476,488
Int. Cl.³ A61G 7/10
U.S. Cl. 5—86 **14 Claims**



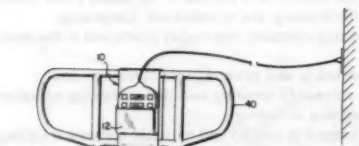
1. An invalid transfer device comprising a base with a front end having a narrower width than a rear end, said rear end including a pair of rear wheels having a larger diameter than a pair of front wheels coupled to said front end, said rear end carrying a control unit adapted to impart movement to said rear wheels, a vertical support extending upwardly from said rear end, a boom member extending outwardly from said vertical support in the direction of said front end, a connecting link coupled to said vertical support and said boom support to fixedly dispose said boom member relative to said vertical support, an anti-sway assembly extending outwardly from said vertical support in the direction of said front end, a carrier assembly adapted to carry the invalid above said front end, and a cable extending from said carrier assembly to said control unit, said control unit being operable to also control movement of said cable to lift the invalid relative to said base, and said anti-sway assembly operatively connected to said vertical support and said carrier assembly thus cooperating with said carrier assembly to substantially limit lateral movement of said carrier assembly away from a position above said front end, whereby the invalid remains substantially directly above said narrower front end width regardless of the elevation thereof relative to said base to stabilize the transfer device during operation.

4,484,367

NURSE CALL APPARATUS

Betty S. Jenkins, Rte. 14, Box 67, Gray, Tenn. 37615

Filed Apr. 8, 1983, Ser. No. 483,846
Int. Cl.³ A47C 21/08, 19/02
U.S. Cl. 5—425 **12 Claims**



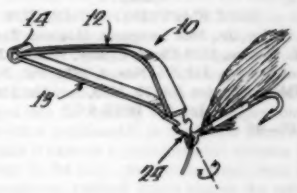
1. A nurse call apparatus comprising:
a bed;
a side railing fixed to a side of said bed;
a nurse call device; and
a nurse call holder, said nurse call holder including an elongated flexible sheet having a first face and a second face opposite said first face, each bounded by opposite first and second longitudinal side edges and opposite first and second transverse side edges connecting opposite ends of said first and second longitudinal side edges; a pocket formed on said first side face removably receiving said nurse call device therein, said flexible sheet being wrapped about said side railing with said pocket exposed and facing said bed and each of said first and second longitudinal side edges extending around said side railing; and means, located along said first and second transverse side edges, for fastening said flexible sheet wrapped about said side railing with said transverse side edges in horizontal confronting relation to each other.

4,484,368

FISHERMAN'S TOOL FOR CUTTING LINE AND CLEANING HOOKS

Harry C. Thompson, deceased, late of Elgin, Ill. (by Sally L. Jacobsen, executor), assignor to D. H. Thompson Co., Elgin, Ill.

Filed Sep. 27, 1982, Ser. No. 423,824
Int. Cl.³ B25F 1/00
U.S. Cl. 7—106 **16 Claims**



1. A fisherman's tool for cutting line and cleaning hooks, comprising: a first generally flat spring member having a line receiving recess at one end thereof, a second generally flat spring member fixed to the first spring member at the other end thereof and extending generally parallel thereto and having a surface facing the first spring member, said second flat spring member having a curved end adjacent its free end with a cutting edge on the surface facing the first spring member, slidably engagable with the first spring member across the line receiving recess to sever line positioned in the recess when the first and second spring members are pressed together, said first and second spring members having an included angle of substantially less than 45 degrees adjacent the free end of the second spring member to assure smooth sliding contact of the cutting edge with the first spring member across the recess to provide a shearing action in severing the line, and a tapered point integrally formed at said one end of the first member with sharp side edges sufficiently narrow to fit in conventional hook eyes so they may be cleaned by rotating the point in the hook eye.

4,484,369

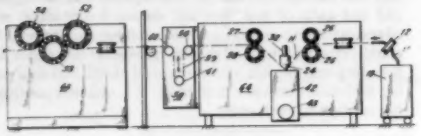
METHOD FOR DRYING TUBULAR KNITTED FABRIC

Edmund A. Diggle, Jr., Oradell, and John Krajcovic, Ridgefield Park, both of N.J., assignors to Samcoe Holding Corporation, Woodside, N.Y.

Filed Apr. 29, 1983, Ser. No. 489,960
Int. Cl.³ D06B 3/18, 15/09
U.S. Cl. 8—151 **11 Claims**

7. The process of treating wet tubular knitted fabric to reduce its liquid content, which comprises
(a) supplying wet processed tubular knitted fabric in wet form,
(b) laterally distending said wet tubular knitted fabric in a first stage to flat relatively smooth form,

(c) guiding the tubular fabric to pass around and in contact with a gas discharge nozzle,
(d) while said fabric is passing said nozzle, discharging a gaseous drying medium through the fabric at extremely high velocity,
(e) adjustably controlling the speed of advance of the tubular fabric on the entry side of said nozzle,



(f) adjustably driving the tubular fabric on the exit side of the nozzle to maintain the fabric under tension and in contact with said nozzle as the fabric passes over said nozzle,
(g) substantially immediately thereafter, laterally distending said tubular fabric in a second stage to flat form and predetermined width, and
(h) thereafter further processing said fabric.

4,484,370

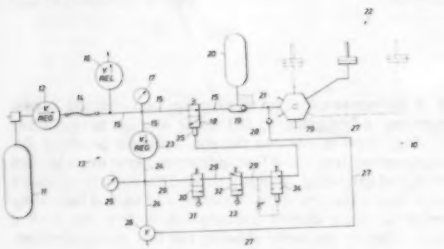
TUBE EMPTYING APPARATUS

Othel D. Easley, Jr., 5461 Lampasas, Houston, Tex. 77027, and John T. Wooten, 1814 Chart, Crosby, Tex. 70832

Division of Ser. No. 318,274, Nov. 4, 1981, Pat. No. 4,411,705. This application Jul. 25, 1983, Ser. No. 516,795

Int. Cl.³ B08B *9/02*

U.S. Cl. 15—95 **16 Claims**



1. A gas operated tube emptying apparatus for firing missiles into a tube and dislodging particles in said tube comprising;
(a) a means for loading and delivering missiles;
(b) a gas source capable of supplying the amount and pressure of gas needed, and
(c) a means for controlling and delivering the pressure and amount of gas needed comprising;
(i) a high pressure gas delivery line connected at its upstream end to the gas source, passing from the gas source and being connected to a three-way normally open valve with first activator, said three-way normally open valve being connected downstream, through the high pressure delivery line, to a quick exhaust shuttle valve, said shuttle valve being openly connected to a gas accumulator and, when opened, downstream, through the high pressure delivery line, to the missile loading and delivery means, and
(ii) a low pressure gas delivery line being connected at its upstream end to the high pressure delivery line between the gas source and the three-way normally open valve and downstream of the high pressure line to a low pressure regulator which reduces the pressure from the high pressure line, said regulator being openly connected to a first low pressure line, the first low pressure line being connected downstream of the regulator to a two-way normally closed valve, having a second activator, the two-way normally closed valve being connected, downstream, through the first low pressure line to a three-way normally closed valve having a third activator, said three-way normally closed valve being connected, downstream, through the first low pressure line to a two-way normally open pulse valve set to deliver a predetermined pulse of gas, the pulse valve being connected, downstream, through the first low pressure line to the first activator so that by activating the second activator, then the third activator, the first activator is activated and the accumulator discharges its gas through the missile loading and delivery means.

4,484,371

FLOOR-SWEEPING MACHINE

Dieter Pätzold, Nassau; Alfons Schreiber, Wuppertal, and Peter Tiwi, Nassau, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

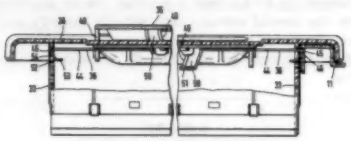
PCT No. PCT/DE82/00003, § 371 Date Sep. 8, 1982, § 102(e) Date Sep. 8, 1982, PCT Pub. No. WO82/02329, PCT Pub. Date Jul. 22, 1982

PCT Filed Jan. 7, 1982, Ser. No. 422,974

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1981, 3100496

Int. Cl.³ A47L *11/08*

U.S. Cl. 15—41 R **13 Claims**

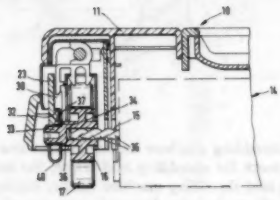


1. In a floor-sweeping machine of the type including a housing having an opening in the top portion thereof, brush means rotatably mounted in the housing, means for supporting the housing for movement on a surface to be cleaned and means for moving the housing, the combination comprising:
a dirt collecting container removably positioned in the opening;
a lid connected to and covering said container; and
means for releasably securing said dirt collecting container in the housing including
a lever located in said lid and movable between a locking and an unlocking position,
legs extending from said lever in said container and movably mounted on the inside thereof,
projections extending from said lever, and
resilient locking and unlocking means attached to said lid and having end portions which retractably engage the housing and an intermediate portion which is in sliding contact with said projections so that when said lever is in the unlocking position said projections compress said locking and unlocking means to retract said end portions from the housing.

4,484,372
FLOOR-SWEEPING MACHINE

Dieter Pätzold, Nassau; Alfons Schreiber, Wuppertal, and Peter Tiwi, Nassau, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

PCT No. PCT/DE82/00005, § 371 Date Sep. 8, 1982, § 102(e) Date Sep. 8, 1982, PCT Pub. No. WO82/02331, PCT Pub. Date Jul. 22, 1982
PCT Filed Jan. 7, 1982, Ser. No. 422,980
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1981, 3100372
Int. Cl.³ A47L *11/33, 11/40*
U.S. Cl. 15—42 10 Claims



1. In a floor-sweeping machine of the type including a housing having two lateral portions, means for supporting said housing for movement on a surface to be cleaned and means for moving said housing, the combination comprising:

cylindrical brush means having end portions; and

means for removably mounting said brush means on said housing for rotation about a horizontal axis including

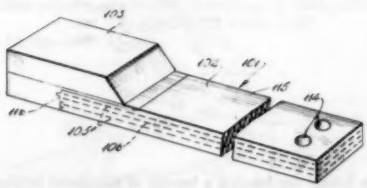
at least one mounting unit for mounting one of said end portions, on the respective lateral portion of the housing, said unit including a resilient substantially U-shaped element slidable onto said respective lateral portion and having a first and a second leg which embrace said lateral portion and each of which frictionally engages said lateral portion to retain said U-shaped element in a mounted position on said housing, and

a tubular receptacle secured to said first leg which faces towards said brush means in the mounted position of said U-shaped element and centered on said axis in the mounted position of said U-shaped element to receive said one end portion of said brush means for rotation about said axis.

4,484,373
SWEEPER BRISTLE ELEMENT

John G. Price, Montgomery, Ala.

Filed Mar. 29, 1983, Ser. No. 479,934
Int. Cl.³ A46B *17/10, 13/02*
U.S. Cl. 15—159 A 25 Claims



1. An improved sweeper bristle element comprising:

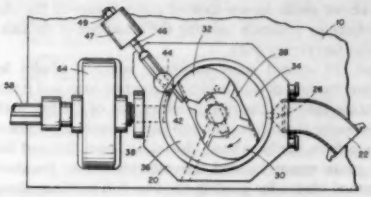
(a) a solid elastomeric stem having a first end and a second end and a substantially rectangular cross-section adjacent said second end defining four stem sides;

(b) a solid elastomeric toe laminated to said stem, said toe overlying and being laminated to solely one of said four stem sides and said second end of said stem.

4,484,374
APPARATUS FOR STUFFING GROUND MEAT INTO CASINGS

Melvin Herschberger, Box 453, Kalona, Iowa 52247

Filed Mar. 16, 1982, Ser. No. 358,704
Int. Cl.³ A22C *11/08*
U.S. Cl. 17—37 8 Claims

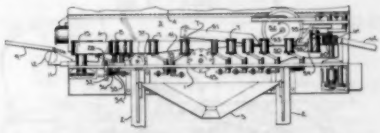


1. An apparatus for stuffing ground meat from a source into casings so as to form links, said apparatus comprising a housing defining a main chamber, means for connecting the main chamber to a vacuum source, an inlet passageway to said chamber from the meat source, a discharge passageway from said chamber, a stuffing horn connected to the discharge passageway and providing for introduction of the meat into the casing, a rotor rotatably mounted in the main chamber for metering the meat entering from the inlet passageway and passing a predetermined amount of meat through the discharge passageway and into the stuffing horn, adjustable means combined with the rotor and main chamber for selectively varying the amount of meat discharged into the stuffing horn, said adjustable means including a member positionable at a selected predetermined position in which it extends a predetermined distance into the path of the rotor in the main chamber to direct meat into the discharge passageway, resilient means biasing the member to the selected position while providing for movement of the member gradually out of the chamber as it is engaged by the rotor, and power means for driving said apparatus including the rotor.

4,484,375
APPARATUS FOR FILLETING FISH

Ben C. Brower, Gladstone, Mich., assignor to A. W. Manufacturing Inc., Gladstone, Mich.

Filed Jul. 10, 1981, Ser. No. 282,023
Int. Cl.³ A22C *25/08, 25/16*
U.S. Cl. 17—56 17 Claims



1. A fish filleting machine for producing shank fillets free of bones and undesirable belly meat wherein said fish are transported belly-side-down and head end leading along a conveying path, said machine comprising:

a pair of spaced apart belly cutting blades for making a pair of belly cuts in the fish on opposite sides of the anal fin;

belly positioning means located upstream of the belly cutting blades, said belly positioning means including a longitudinal fish-engaging member positioned in said conveying path to engage the belly of a fish and means for moving said member upwardly in response to the forward movement of a fish along said path to raise the tail end of the fish off the belly cutting blades to end the belly cuts at the anal fin;

belly guide means located downstream of the belly cutting blades for centrally locating the belly of the fish along said

conveying path, said belly guide means includes a groove formed along its length that receives the anal fin of the fish and the upper surface of said belly guide means forms an inclined plane extending upwardly with respect to said conveying path;

a cleaning wheel located downstream of said belly guide means and positioned to extend upwardly into the belly cavity for eviscerating the fish;

backbone guide means located downstream of the cleaning wheel for centrally locating the backbone of the fish along said conveying path;

a pair of spaced apart backbone removal blades located downstream of said backbone guide means and positioned to cut through the ribs on either side of the fish backbone whereby the fish is split into two individual portions separate from the backbone, dorsal and anal fins and tail;

rib guide means located downstream of the backbone removal blades for guiding the two fish portions along said path from the backbone removal blades; and

a pair of rib removal blades located downstream of the rib guide means and positioned to cut through the sides of the fish portions above the ribs to provide a pair of shank fillets.

4,484,376

BLOCKING DEVICE FOR ROVINGS ON SPINNING MACHINE DRAW FRAMES

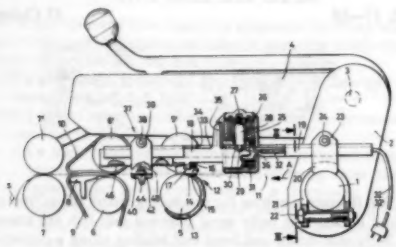
Alfred Glock; Rudolf Schön, both of Stuttgart; Bernhard Schönung, Filderstadt, and Kurt Seebo, Esslingen, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Dec. 28, 1981, Ser. No. 335,210

Claims priority, application Fed. Rep. of Germany, Jan. 2, 1981, 3100049; Nov. 19, 1981, 3145798

Int. Cl.³ D01G *31/00*; D01H *5/86*

U.S. Cl. 19—0.25 **18 Claims**



1. A draw frame for a spinning machine converting a roving into a thread having upper and lower paired inlet and outlet rollers and an upper and lower paired drafting rollers therebetween, means for sensing a break in said thread, a blocking device for arresting the motion of said roving, and a holding device for securing the forward end of said roving in alignment with said drafting rollers, switch means operable in response to said sensing means for operating said blocking and holding devices, said holding device being adjustably mounted between said paired inlet rollers and said drafting rollers along the path of movement of said roving.

4,484,377

SHREDDING MACHINE FOR RECYCLING TEXTILE FIBERS AND METHOD

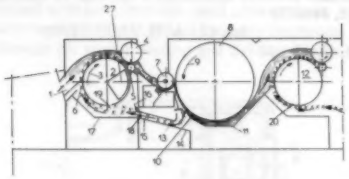
André Morel, La Croix du Mont, France, assignor to Constructions Mecaniques F. LaRoche & Fils, France

Filed Jan. 27, 1982, Ser. No. 342,989

Claims priority, application France, Jan. 27, 1981, 81 02058

Int. Cl.³ D01G *11/00*

U.S. Cl. 19—82 **10 Claims**



1. In a waste shredding machine having at least one shredding drum with teeth for shredding said waste, the improvement comprising said shredding machine further having:

at least one perforated drum disposed upstream of said at least one shredding drum;

a vacuum means for establishing a strongly reduced pressure within said at least one perforated drum;

a first transporting means delivering said waste to be shredded to said at least one perforated drum;

a second transporting means delivering said waste to be shredded from said at least one perforated drum to said at least one shredding drum;

a separating means disposed downstream of said at least one shredding drum, separating said waste into sufficiently shredded waste and insufficiently shredded waste; and

a duct interposed between said separating means and said at least one perforated drum such that said vacuum means draws said insufficiently shredded waste from said at least one separating means to said perforated drum.

4,484,378

BINDER FOR BINDING A BUNDLE OF ELONGATED BODIES

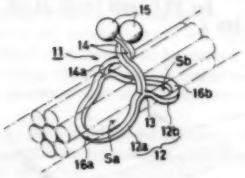
Shigeru Kimura, Kamakura, and Masaru Arakawa, Chigasaki, both of Japan, assignors to NIFCO Inc., Yokohama, Japan

Filed Mar. 17, 1983, Ser. No. 476,189

Claims priority, application Japan, Mar. 19, 1982, 57-42830

Int. Cl.³ B65D *63/00*; F16L *3/00*

U.S. Cl. 24—30.5 S **11 Claims**



1. A binder for binding a bundle of elongated bodies comprising an elongated closed loop initially lying in a substantially common plane and a pair of converging-and-diverging arms integrally connected to and rising substantially perpendicular from opposite middle portions of said closed loop at its narrowest dimension, said bundle adapted to extend along the elongated axis of said closed loop and to initially fall generally in the same plane as said loop, twisting of said pair of arms into interlocking relationship causing the elongated ends of said loop to move out of said plane relative to said middle portions

to accommodate said bundle diametrally within said closed interlocked arms.

4,484,379

CLAMPING BUCKLE

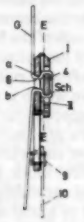
Horst G. Appelt, and Günter Wolfertz, both of Wuppertal, Fed. Rep. of Germany, assignors to Schaeffer-Scovill Verbindungstechnik GmbH, Wuppertal, Fed. Rep. of Germany

Filed Nov. 5, 1982, Ser. No. 439,469

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1981, 3145360

Int. Cl.³ A44B *11/00*

U.S. Cl. 24—197 **6 Claims**



1. In a clamping buckle for a strap having a buckle upper part and a buckle lower part, said upper part and said lower part being swingable with respect to each other around a hinge axis, wherein said upper part and lower part have a position for clamping the strap in which said parts are engaged one above the other in approximately parallel planes and form two pull-through gaps, said parts having slots and arms for diverting the strap including an arm of the buckle upper part opposite and partially overlapping a slot of the buckle lower part forming an angularly bent pull-through gap course, the improvement wherein:

said hinge axis extending transverse to a pull-through direction of the strap;

said buckle upper part having a single central arm and two slots adjoining and defining the latter and defining said two pull-through gaps;

said buckle parts being engageable one above the other in a position determining a maximum inside opening of the pull-through gaps.

4,484,380

FASTENERS FOR JEWELRY AND THE LIKE

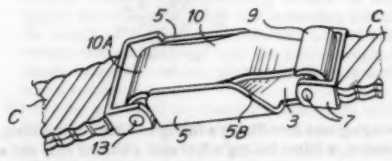
Vittorio Redi, Olmo, Arezzo, Italy

Division of Ser. No. 349,758, Feb. 18, 1982,. This application Oct. 25, 1983, Ser. No. 545,233

Claims priority, application Italy, Mar. 3, 1981, 1210/81[U]

Int. Cl.³ A44C *5/02*; F16G *15/00*

U.S. Cl. 24—240 **1 Claim**



1. A fastener assembly for jewelry comprising:

(a) a one-piece foil including:

a base having lateral sides, a first end and a second end;

an open hook connected to said first end and curving up over said base with a bottom surface facing said base;

a curved partial loop connected to said second end and curved up over said base;

a tongue extending from said curved partial loop forward said open hook and engaged under said open hook and with said bottom surface of said open hook, said tongue extending only partly along said bottom surface;

a side lug extending upwardly from each lateral side of said base and extending on each side of said tongue, each lug having a rear edge extending at an angle to a plane of said base adjacent said second end of said base and defining with said curved partial loop a through opening, each lug having a forward edge inclined at an angle with respect to the plane of said base and away from said open hook, said base lugs forming a space for receiving a resilient movement of said tongue down away from said bottom surface of said hook into engagement with a top surface of said base;

said tongue being curved concavely away from said base along a length of said tongue from said partial loop to said open hook for increasing the stiffness of said tongue;

said tongue having a curved raised projection intermediate a length of said tongue from said partial loop to said open hook and having a length which is a fraction of that of said tongue, said projection disposed centrally on said tongue and having a width less than a total width of said tongue between said lugs;

(b) an elastic foil superimposed on said one-piece foil and positioned on an interior of said lugs, said partial loop, said open hook and said tongue, for increasing resiliency of said one-piece foil; and

(c) a fastening element for engagement in said open hook having a diameter which substantially fills said open hook and which substantially fills a space between said tongue and said bottom surface of said hook when said tongue is in a position down away from said bottom surface of said hook and into engagement with the top surface of said base.

4,484,381

CLAMP ARRANGEMENTS

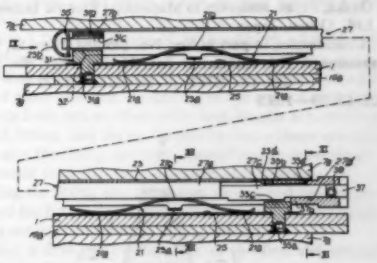
Stafford M. Ellis, West Sussex, and James P. M. Keay, Kent, both of England, assignors to Marconi Avionics Limited, England

Filed Jul. 19, 1982, Ser. No. 399,960

Claims priority, application United Kingdom, Jul. 24, 1981, 8122993

Int. Cl.³ A44B *21/00*

U.S. Cl. 24—523 **19 Claims**



1. An assembly comprising a board and a mechanism for clamping a marginal portion of the board adjacent an edge between two opposed substantially flat parallel walls, the mechanism being mounted on a major surface of the board adjacent said edge and being capable of expansion in a direction normal to said marginal surface, characterized in that said

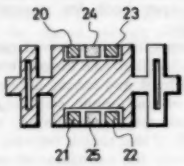
mechanism comprises: a spring strip extending in the direction of its length along said marginal portion and having corrugations transverse to its length; and an elongate cam having a longitudinal axis extending along the length of said spring strip overlying said spring strip, and being constrained to permit rotational motion only about its longitudinal axis, together with a limited motion in a direction normal to said marginal surface so as by contact between the cam and the spring strip to cause, on rotation of said cam expansion of the mechanism, and on limitation of expansion, compression of the corrugations in the spring strip.

4,484,382

METHOD OF ADJUSTING RESONANT FREQUENCY OF A COUPLING RESONATOR

Hirofumi Kawashima, Tokyo, Japan, assignor to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Filed Mar. 30, 1982, Ser. No. 363,466
Claims priority, application Japan, May 15, 1981, 56-73245
Int. Cl.³ H01L *41/22*
U.S. Cl. 29—25.35 **13 Claims**



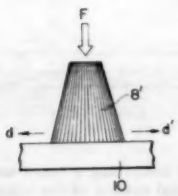
1. A method of adjusting the resonant frequency of a resonator having a plurality of coupled vibrational modes which comprises the steps of: measuring the resonant frequency of the fundamental vibration at a plurality of different temperatures; calculating a frequency-temperature coefficient of the first order α by use of said different temperatures and respective resonant frequencies of the fundamental vibration; adding weights to or removing weights from the vibrational portion of the resonator at a first predetermined portion thereof so as to adjust the first order temperature coefficient α to almost zero; and thereafter adding weights to or removing weights from the vibrational portion at a second predetermined portion thereof so as to adjust the resonant frequency of the fundamental vibration in such manner that the frequency-temperature coefficient of the first order α hardly shifts.

4,484,383

METHOD OF MANUFACTURING A SPEAKER DIAPHRAGM

Hiroyuki Takewa; Katsuaki Satoh, and Seiichi Ishikawa, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 149,368, May 13, 1980, abandoned. This application Jun. 21, 1982, Ser. No. 390,609
Int. Cl.³ B29D *17/00*; B21D *35/00*
U.S. Cl. 29—169.5 **1 Claim**



1. A method of manufacturing a speaker diaphragm from a multi-layer block constructed of a plurality of rectangular thin layers to be developed into a diaphragm core having a honeycomb construction, said multi-layer block having left and right sides respectively corresponding to the outer surface of a first layer and the outer surface of the last layer of said plurality of layers, top and bottom sides respectively corresponding to the opposite edges of said plurality of rectangular thin layers, and front and rear ends respectively corresponding to the remaining edges of said rectangular thin layers, each of said rectangular thin being connected to an adjacent layer at a plurality of places by means of adhesive, said adhesive being arranged in the form of parallel strips, and these adhesive strips being substantially parallel to said front and rear ends of said multi-layer block, said method comprising the steps of:

(a) developing said multi-layer block into a cylindrical block in such a manner that the bottom side of said multi-layer block corresponds to the center of said cylindrical block, walls forming each cell of the honeycomb of the cylinder extending radially of the cylinder;

(b) connecting said left and right sides of each other by means of an adhesive which is painted on one of said left and right sides at spaced-apart intervals so as to form adhesive strips with a predetermined pitch;

(c) expanding said front end which corresponds to the bottom of said cylindrical block radially for obtaining said diaphragm core, said expanding step having the steps of

(a) inserting an apex of a cone-shaped tool into the center of said bottom of said cylindrical block for making the shape of said cylindrical block to be a truncated cone;

(b) drawing out said cone-shaped tool from the truncated cone;

(c) further developing said truncated cone into a flat disk, in which said walls forming each of said cells of the honeycomb extend axially of said flat disk, by the steps of

(i) placing said truncated cone on a flat plate; and

(ii) applying a force at the top of said truncated cone in a direction perpendicular to said flat plate for making the shape of said truncated cone to be a flat disk; and

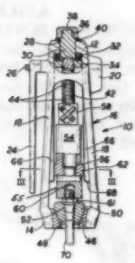
(d) attaching a thin layer to each of the top and bottom of said diaphragm core.

4,484,384

HAND OPERATED FITTING SWAGER

Steven M. Knowles, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Nov. 22, 1982, Ser. No. 443,542
Int. Cl.³ B23P *19/02*
U.S. Cl. 29—237 **3 Claims**



1. A swaging tool for affixing a fitting to a hose comprising, in combination, a frame having a first end, a second end, and a central region intermediate said ends, a swaging die support mounted within said frame second end having an axis, an elongated screw rotatably mounted upon said frame first end extending toward said second end having an axis coincident with said die support axis, said screw having an outer end extending from said frame first end and an inner end located

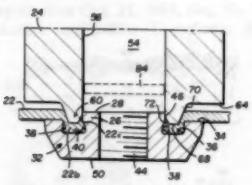
within said frame central region, thrust bearing means mounted upon said frame first end adjacent said screw outer end rotatably supporting said screw and fixing said screw against axial displacement, screw rotating means defined on said screw outer end, an adapter movably mounted upon said frame at said central region, said adapter comprising an elongated tubular member having a nut mounting end disposed toward said frame first end, linear first guide means defined on said frame at said central region substantially parallel to said axis of said die support and screw, second guide means defined on said adapter slidingly cooperating with said first guide means permitting linear movement of said adapter parallel to said die support axis and preventing rotation of said adapter relative to said axis, said adapter including a fitting receiving end disposed toward said die support, and threaded nut means defined on said adapter nut mounting end mating with said screw whereby rotation of said screw translates said adapter relative to said die support.

4,484,385

METHOD OF FORMING SEALED NUT AND PANEL ASSEMBLY

Harold T. Woods, Livonia, Mich., assignor to Multifastener Corporation, Southfield, Mich.

Filed Jul. 13, 1982, Ser. No. 397,756
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—432.2 **4 Claims**



1. A method of forming a low pressure fluid sealed out and panel assembly, said nut including a rectangular pilot having a top portion for piercing an opening in said panel, said nut having end walls generally perpendicular to the top face of said pilot and flange portions on opposed sides of said pilot, said flange portions having bearing surfaces generally parallel to and lying in a plane spaced from said pilot top portion, said nut having generally parallel grooves on opposed sides of said pilot in said flange bearing surfaces, said grooves each hving an inner side wall adjacent said pilot, a bottom wall and an outer side wall extending to said flange bearing surfaces, the method comprising:

(a) engaging said nut pilot end against said panel and piercing said panel with said pilot top portion;

(b) shearing and deforming the outer edge of said nut end walls toward the plane of said flange bearing surfaces and simultaneously shearing and deforming the four top corners of said pilot toward the plane of said flange bearing surfaces forming a panel bearing surface on said pilot spaced below said pilot top face extending substantially the length of said nut end walls and around said pilot corners into said grooves with the pierced edges of said panels supported on said pilot panel bearing surface in sealed relation;

(c) forming said panel into bearing contact with said flange bearing surfaces and deforming the pierced panel edges located between said flange bearing surfaces and said pilot into the openings of said nut grooves;

(d) continuing to deform said pierced panel edges into said nut grooves until said panel engages said groove bottom walls spaced from said pierced panel edges and deforming said panel edges into sealing engagement with said inner groove walls spaced from said groove bottom walls; and

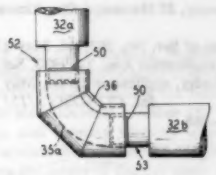
(e) the panel portion deformed in said nut grooves being continuous with the main portion of said panel and said panel in bearing sealing engagement with said bearing surfaces of said pilot and said flanges, providing a continuous low pressure seal between said nut and said panel.

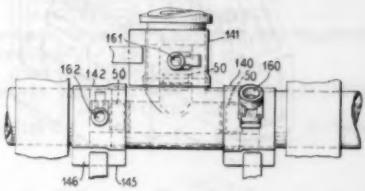
4,484,386

METHOD OF FIELD INSULATING PIPE JOINTS

Lawrence J. Stonitsch, Joliet, Ill., assignor to Rovanco Corp., Joliet, Ill.

Filed Nov. 1, 1982, Ser. No. 438,030
Int. Cl.³ B21D *39/00*
U.S. Cl. 29—455 R **3 Claims**





1. The method of making field installed insulated and shrouded pipe joints comprising the steps of:

a. providing first and second lengths of insulated and shrouded pipe, each having an end to be joined to an end of the other length with the ends disposed at an angle to one another, the length comprising an inner pipe, an envelope of rigid foamed insulation surrounding the inner pipe and an outer protective shroud surrounding the envelope of insulation,

b. projecting the inner pipe beyond the end of the envelope of insulation and beyond an end of the shroud,

c. providing an angle pipe fitting having first and second ends disposed at an angle to one another adapted to be connected to the ends of the lengths,

d. welding a first end of one of the lengths to a first end of the fitting,

e. providing a fitting shroud having first and second ends spaced apart less than the spacing of the ends of said outer shrouds from one another when said lengths are attached to said fitting, said fitting shroud having a shape adapted to receive the fitting interiorly thereof and an inner diameter greater than the outer diameter of the fitting,

f. inserting the fitting into the fitting shroud and beyond the weld of the first end to a point where the second end of the fitting projects beyond the fitting shroud,

g. welding a first end of the other of the first and second lengths to the second end of the fitting,

h. centering the fitting shroud in spaced relation around the fitting with the first and second ends of the fitting shroud spaced from the ends of the envelope of insulation and the end of the shroud of the first and second lengths to provide gaps between the fitting shroud and said ends of said first and second lengths,

i. attaching mold members to the fitting shroud and length

shrouds spanning and enclosing the gaps, at least one mold member having a filling orifice,

j. flowing a settable foaming insulation material in a non-set state through said orifice and into the area between the fitting shroud and fitting and into the gaps,

k. setting the foaming material and filling the area and gaps with foamed insulation,

l. removing the mold members and exposing the foamed insulation in the gaps,

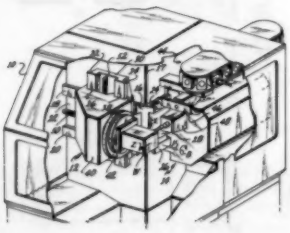
m. and thereafter enclosing the foamed gaps with protective material which overlaps the fitting shroud and length shrouds.

4,484,387

MACHINE TOOL BASE AND CARRIAGE SYSTEM

Israel Nachmany, 32 Hamaagal Str., Rimon, Kiryat Uno, 55000, Israel

Continuation of Ser. No. 263,146, May 13, 1981, abandoned. This application Aug. 22, 1983, Ser. No. 525,430
Claims priority, application Israel, May 16, 1980, 60089
Int. Cl.³ B23Q *3/157*
U.S. Cl. 29—568 **9 Claims**



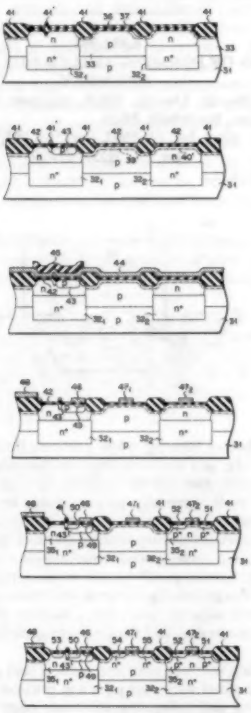
1. Machine tool apparatus comprising a machine bed including a block having a first vertical wall facing outwardly from the block toward a quadrant QH and a second vertical wall facing outwardly from the block towards a second quadrant QT, said walls together defining a vertical line of intersection and further being oriented at right angles to each other to also define a set of four quadrants as seen in horizontal plan and about said vertical axis, including a work holder quadrant QH, a tool holder quadrant QT and a workpiece quadrant QW, said block occupying the remaining quadrant QB, a workpiece holder, means including spaced parallel and horizontal first guide rails associated to said first vertical face, means for slidably mounting the workpiece holder for at least horizontal and vertical movement on the first guide rails and in quadrant QH, said holder including means for carrying the workpiece for slidable movement in the X axis and in the Y axis, and further for rotationally moving the workpiece about the B axis aligned with the Y axis in quadrant QW, a tool holder, tool holder mounting means including spaced parallel horizontal second guide rails lying in and defining upper and lower horizontal planes with the respective ones of said first guide rails and a work zone in quadrant QW, said mounting means being operable in quadrant QT for slidably mounting a tool holder on the second guide rails for horizontal movement therein, said tool holder including means for carrying the tool for movement along and for rotating the tool about the Z axis in quadrant QW, said tool holder, work piece holder, and mounting means as so defined being constructed and arranged to operate in the general horizontal planar zone defined by the upper and lower planar and horizontal boundaries of the first and second guide rail means, said quadrant QW being vertically open below the workpiece for free fall of swarf and working fluids, and means associated with each wall for forming an upper guide having inner and outer side bearing surfaces, means associated with each wall for forming lower guides having an upper bearing surface, a side bearing surface, and a lower bearing surface, said outer surfaces of said upper guide and said side surface of said lower guide defining accurately parallel surfaces with respect to each other in the same or spaced parallel planes, each of said mounting means forming carriages having supporting wall surfaces defining slide bearing surfaces for mating with the respective with ones of said side wall surfaces.

4,484,388

METHOD FOR MANUFACTURING SEMICONDUCTOR BI-CMOS DEVICE

Hiroshi Iwasaki, Chigasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaishi, Japan

Filed Jun. 14, 1983, Ser. No. 504,161
Claims priority, application Japan, Jun. 23, 1982, 57-108069
Int. Cl.³ H01L *21/225, 21/20, 21/76*
U.S. Cl. 29—571 **14 Claims**



1. A method for manufacturing a semiconductor device, comprising the steps of: selectively forming, in a surface layer of a semiconductor substrate of a first conductivity type, a plurality of high concentration buried layers having a second conductivity type, and growing an epitaxial semiconductor layer of the first conductivity type on an entire surface of said substrate; forming well regions of the second conductivity type which extend from a surface of said epitaxial semiconductor layer to said high concentration buried layers; selectively forming a field insulating film on the surface of said epitaxial semiconductor layer so as to form first conductivity type element regions and second conductivity type element regions surrounded by said field insulating film; forming a thin insulating film on surfaces of said element regions; selectively doping one of said second conductivity type element regions with a first conductivity type impurity so as to form a first conductivity type active base region of a bipolar transistor; forming gate

electrodes of MOS transistors interposed with said insulating film on said first conductivity type element regions and remaining ones of said second conductivity type element regions in which said active base region is not formed, said gate electrodes comprising polysilicon layers which are doped with an impurity to have a low resistance; forming a second conductivity type emitter region in said first conductivity type active base region; selectively doping a second conductivity type impurity so as to simultaneously form a second conductivity type collector contact region of said bipolar transistor, and second conductivity type source and drain regions of said MOS transistors in said first conductivity type element region, said second conductivity type source and drain regions being self-aligned with said gate electrodes of said MOS transistors; and selectively doping a first conductivity type impurity so as to form an external base region of the first conductivity type in said first conductivity type base region and first conductivity type source and drain regions of said MOS transistors in said remaining ones of said second conductivity type element regions, said first conductivity type source and drain regions being self-aligned with said gate electrodes of said MOS transistors.

4,484,389

IMPROVED METHOD OF PRODUCING A SEMIFINISHED COMMUTATOR

Boris Kogej, and Joze Potocnik, both of Idrija, Yugoslavia, assignors to Kolektor p. o., Idrija, Yugoslavia

Continuation of Ser. No. 335,350, Dec. 29, 1981, abandoned. This application Oct. 21, 1983, Ser. No. 543,230

Claims priority, application Yugoslavia, Sep. 29, 1981, 2346/81

Int. Cl.³ H01R *43/08*

U.S. Cl. 29—597 **5 Claims**

1. A method of forming anchoring elements of commutator lamellas comprising:

(1) providing an appropriately shaped blank having a smooth interior and exterior surface;

(2) forming, by deforming without cutting only the interior surface of said blank, a plurality of ribs at equally spaced positions about the circumference of an interior surface of said blank without deforming the exterior surface of said blank, each rib having a V-notch at its tip, said V-notch comprising two longitudinal ridges and a longitudinal groove, said ribs at equally spaced positions forming longitudinally interspaces; and

(3) subsequently flattening said ridges of said V-notch where the ridge mass is deformed in tangential direction into the area of the longitudinal interspaces.

4,484,390

PIEROGI CUTLER WITH PIVOTED FORMING TOOL

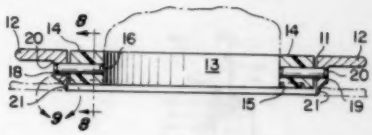
Frank J. Wojtowicz, 111 Casey Ave., Wilkes-Barre, Pa. 18702

Filed Sep. 27, 1982, Ser. No. 424,552

Int. Cl.³ B26B *3/00*

U.S. Cl. 30—316 **1 Claim**

1. A hand held implement for cutting a sheet of dough which encases a filling material and to thereafter crimp the edges of the aforesaid cut dough, the implement comprising an outer casing having a cutting edge along the lower portion thereof, an inner forming tool pivotally mounted within an opening formed in said outer casing, said forming tool having a smooth surface along one side thereof and a slotted surface provided along the other side of said forming tool, said pivotal arrangement comprising a pair of diametrically opposed dowel pins fixedly mounted in the outer wall of said forming tool, diametrically opposed slots formed in said outer casing, said diametrically opposed slots in alignment with said diametrically opposed dowel pins, said dowel pins and said diametrically opposed slots permitting said inner forming member to rotate 180° within said opening in said outer casing to thus enable the implement to first cut the dough encasing the filling material and then to rotate the inner forming member 180° to present the slotted surface on said forming member whereupon the implement is pressed against the cut sheet of dough to thereby crimp the dough along the edges of the cut sheet of dough.



4,484,391

MAGNETIC SCALING DEVICE

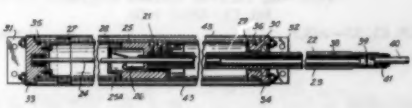
Akihisa Narimatsu, Tokyo, Japan, assignor to Sony Magnescale Inc., Tokyo, Japan

Filed Oct. 15, 1982, Ser. No. 434,575

Claims priority, application Japan, Oct. 15, 1981, 56-163476

Int. Cl.³ G01B *7/02*

U.S. Cl. 33—125 C **10 Claims**



1. In a magnetic scaling device of the type comprising a casing having an interior and an exterior; a magnetic scale disposed on said casing; a reading head disposed in the interior of said casing for scanning said magnetic scale and providing an output signal corresponding to relative linear displacement of said head and said scale; and means for effecting relative displacement of said magnetic scale and said reading head; the improvement of said casing being closed and having at least a portion thereof of a non-magnetic material, and said magnetic scale being affixed on the exterior of said non-magnetic portion of the casing such that said reading head scans said magnetic scale through said non-magnetic portion.

4,484,392

METHOD AND MEANS OF INSTALLING SIDING

Armond A. DeFino, 3803 SW. 13th St., and Frank J. DeFino, 300 SE. Granger, both of Des Moines, Iowa 50315

Filed Aug. 28, 1981, Ser. No. 297,342

Int. Cl.³ G01B *3/30*

U.S. Cl. 33—187 **3 Claims**

1. A gage for installing siding, comprising,

a fame means adapted to support a first length of siding in a relatively vertical position against a supporting wall,

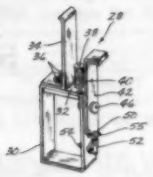
said frame means having a hook portion thereon adapted to hook on the upper edge of an installed length of siding,

said frame means being adapted to support said first length of siding in partial overlapping condition with said installed length of siding,

and release means on said frame means to release said first

length of siding to permit said frame means and said hook portion to be first raised to release said hook portion from said installed length of siding, and then to permit said hook portion to be moved downwardly with said frame means wherey said hook portion moves downwardly between said partial overlapped portions of said first and said installed siding members,

said frame means including a retainer flange to keep said first



siding member from falling out of said gage in a direction outwardly from said wall,

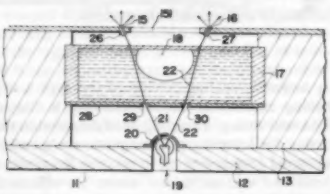
said retainer flange being an upstanding arm means and said hook portion being a vertical arm pivotally secured to said frame means, the upper end of said vertical arm terminating in a hook element, and the other end of said arm terminating in a cam surface, and a spring loaded plunger means is secured to said frame means and releasably engaging said cam surface.

4,484,393

ILLUMINATED SPIRIT LEVEL

Dennis M. LaFreniere, 274 Talbot Ave., Winnipeg, Manitoba, Canada (R2L 0P8)

Filed Aug. 29, 1983, Ser. No. 527,116
Int. Cl.³ G01C *9/06*
U.S. Cl. 33—348.2 **4 Claims**



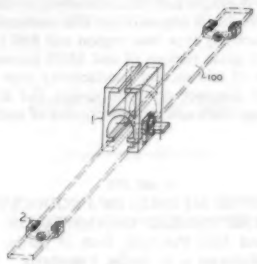
1. An illuminated spirit level comprising an elongate support body providing a surface for placing on an object, a bubble tube mounted in the support body and containing a liquid with a gas bubble in the liquid arranged to lie in a predetermined position at an upper surface of the tube when the surface of the support body lies in a desired inclination, a light source in the support body and arranged beneath the tube so as to divide light onto a lower surface of the tube, first screen means adjacent the light source for dividing the light from said light source into two paths of light, second screen means adjacent the lower surface of said bubble tube to further delineate the two paths of light and direct the same through said tube, a first aperture in the support body through which the upper surface of the bubble tube can be observed for visual inspection of the position of the bubble, a pair of second apertures in the support body arranged one on each side of the first aperture and above the bubble tube such that with the bubble in the predetermined position each path of light passes through the bubble tube to a respective one of the second apertures without intersecting the bubble, each aperture including a translucent diffusion screen whereby the screen is illuminated by the light path, the bubble tube being arranged relative to the light source such that when the bubble moves from the predetermined position the bubble intersects and diverts one of the paths of light whereby the amount of light in said path passing through said aperture is reduced.

4,484,394

CURVE LENGTH MEASURE MEANS

Chih-Yu Hsia, and Chih-Hung Hsia, both of 1830 Fern Hollow Dr., Diamond Bar, Calif. 91765

Filed Jan. 14, 1983, Ser. No. 439,911
Int. Cl.³ G01B *5/20*
U.S. Cl. 33—484 **2 Claims**



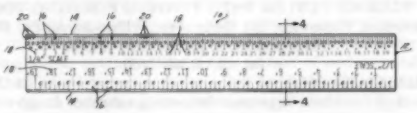
1. A curve length measure means for rulers to improve their convenience and efficiency in measuring the length of curves, said curve length measure means comprising a main accessory and a pair of end auxiliaries, said main accessory comprising a clamp, two clamp ears, one pivot pointer, one pivot pointer seat, a pair of ruler guards and an optional pair of clamp ear bends, said clamp ear connecting one of its end outwardly with one limb of the said clamp and connecting optionally the other end with the said clamp ear bend, said ruler guards connecting to the edges of the said clamp, said clamp having an opening on one of its limbs, said pivot pointer seat comprising a "T" shape part, a string and a pin axis, the lower plate of the said "T" shape part being connected eccentrically with its lowest edge to the edge of one limb of the said clamp in the said opening of the said clamp by the said pin axis, one end of the said string connecting to the upper plate of the said "T" shape part inside the said clamp, the other end of the said string connecting to the opposite limb of the said clamp, the third plate of the "T" shape part connecting with the said pivot pointer outside the said clamp, said end auxiliary comprising a clamp, a wheel and a wheel axial pin, said clamp having a small opening at its central portion, said wheel axial pin connecting the said wheel to the said clamp in the said opening.

4,484,395

BLUE PRINT SCALE

Ricardo Samuels, 21516 Jacksonville, Farmington Hills, Mich. 48018

Filed Jul. 20, 1983, Ser. No. 515,396
Int. Cl.³ G01B *3/02*
U.S. Cl. 33—494 **5 Claims**



1. In a measuring scale for directly measuring distances in feet and inches on drawings made to a reduced scale, said measuring scale including:

an elongated rigid member having at least one straight edge extending down the length thereof and equispaced major division markings arrayed thereon disposed along and extending to said straight edge, the distance between said major markings being on the order of fractions of an inch and having a fixed scale relationship to one foot;

an ordinal series of numeral character markings each immediately adjacent a respective one of said major division markings in said series to provide a designation of a measured distance on a drawing in feet in said scale relationship;

subdivision markings on said member arrayed along and extending to said straight edge subdividing the distance between each pair of major division markings in a fixed proportion corresponding to a fraction of a foot in even inches, the improvement comprising:

a numeral character immediately adjacent each of said subdivision markings, said numeral characters each designating the number of inches that the subdivided distance of said subdivision marking represents in said scale relationship, whereby direct foot and inch readings may be made at any point along said straight edge.

4,484,396

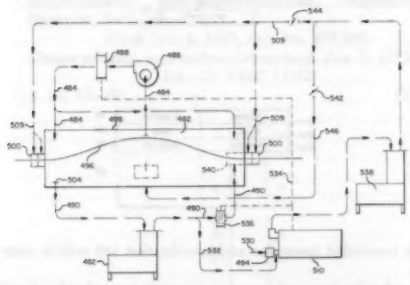
OXYGEN REDUCTION SYSTEM AND CONDENSER APPARATUS WITH AUTOMATIC DEFROST

William J. Darm, Tigard, Oreg., assignor to United Air Specialists, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 53,819, Jul. 2, 1979, , which is a continuation-in-part of Ser. No. 939,334, Sep. 5, 1978, , which is a continuation-in-part of Ser. No. 567,258, Apr. 11, 1975, Pat. No. 4,140,175. This application Jun. 3, 1980, Ser. No. 152,887

Int. Cl.³ F26B *3/00, 21/06*

U.S. Cl. 34—36 **18 Claims**



1. A gas recirculation system for operating with an industrial dryer or process oven for drying articles passing therethrough and producing a process gas containing a combustible vaporized solvent comprising:

condenser means for condensing to a recoverable liquid from said process gas a portion at least of said vaporized solvent;

combustion means connected to receive process gas from which vaporized solvent has been removed by said condenser means for reducing the oxygen content of a portion at least of said process gas to render the gas incapable of supporting combustion comprising a natural gas burner, and including means for withdrawing a portion at least of the system gas from the oven and passing said withdrawn portion through the burner to reduce the available oxygen therein and produce products of combustion in the form of combustion gases, and conduit means for returning a portion at least of the combustion gases produced by said combustion means to the dryer or process oven to create an atmosphere therewithin incapable of supporting combustion.

4,484,397

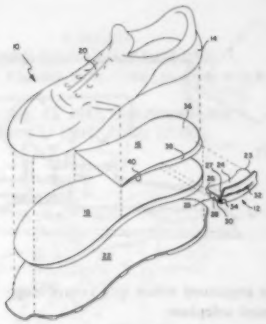
STABILIZATION DEVICE

John J. Curley, Jr., 10 Colonial Village Dr., Arlington, Mass. 02174

Filed Jun. 21, 1983, Ser. No. 506,340

Int. Cl.³ A43B *7/14, 7/20*

U.S. Cl. 36—92 **11 Claims**



1. A stabilizing device for controlling the degree of roll of a running shoe, which includes at least upper and lower laminar sole elements comprising:

an upper plate superposed on and substantially comforming to the top surface of the upper sole element,

a lower plate spaced from said upper plate and interposed between said upper and lower sole elements, and

a side wall extending between and connected to said upper and lower plates and substantially comforming to the side of the upper sole element.

4,484,398

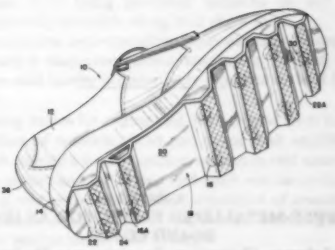
SPIKED SHOE PROTECTOR

Boyd G. Goodwin, and Carol A. Goodwin, both of 1108-16th Ave., NE., Miami, Okla. 74354

Filed Jul. 21, 1983, Ser. No. 515,610

Int. Cl.³ A43B *23/00*

U.S. Cl. 36—135 **9 Claims**



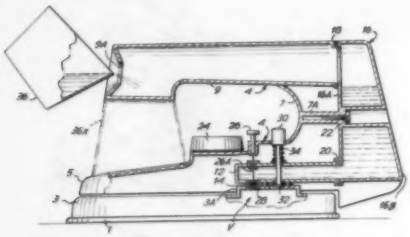
1. A protector for a shoe having outwardly extending cleat means provided on the sole thereof, the protector comprising a substantially flat main body portion adapted for disposition adjacent the outer surface of the sole, a plurality of longitudinally spaced outwardly extending open ended channel means provided on the body portion and extending transversely thereacross, one longitudinal side of each channel means being open to the outer surface of the sole for encasing at least a portion of the cleats, and fastening means cooperating between the main body portion and the shoe for removably securing the protector to the shoe.

4,484,399

STEAM IRON WITH REAR WATER RESERVOIR

Mauro Biancalani, Via Ida Baccini 11, Firenze, Italy

Filed Aug. 5, 1982, Ser. No. 405,593
Claims priority, application Italy, Jun. 10, 1982, 11695/82[U]
Int. Cl.³ D06F 75/14
U.S. Cl. 38—77.3 **3 Claims**



1. An improved steam iron comprising:
a heated soleplate;
a vaporization cavity, adjacent said soleplate for the vaporization of water introduced thereto;
a shaped element forming a cowl portion above said soleplate, a forwardly projecting hollow handle and a rearward connection between said cowl portion and said handle;
a vertical water reservoir joined to said rearward connection, said forwardly projecting handle being supported at said rearward connection and being free from support at the front to provide an open space between said cowl portion and said handle;
a manifold disposed above said vaporization cavity;
at least one opening between said manifold and said vaporization cavity, manually operable obturator means disposed in said opening for opening and closing said opening, a measured quantity of water being introduced into said vaporization cavity upon activation of said obturator;
said reservoir having a first opening for fluid communication with said handle and a second opening for fluid communication with said manifold whereby said reservoir may be filled through said handle and the water contained in said reservoir is passed to said manifold.

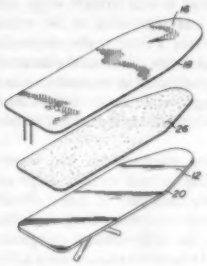
4,484,400

COPPER-METALLIZED FABRIC FOR AN IRONING BOARD COVER

David Lehrman, Cheltenham, Pa., assignor to The Ironees Company, Philadelphia, Pa.

Continuation of Ser. No. 369,863, Apr. 19, 1982, abandoned. This application Dec. 20, 1983, Ser. No. 563,537
Int. Cl.³ D06F 83/00
U.S. Cl. 38—140 **15 Claims**

1. An ironing board cover, comprising:
(a) a porous fabric having an upper, exposed surface,
(b) the fibers of said fabric on said surface and for at least a region below and bounded by said surface being coated by a composition pressure-printed thereon, said composition comprising a metallic component, said coating being porous and permitting said surface to substantially retain its fabric texture, flexibility and porosity while being heat reflective, and wherein such region is heat retentive,



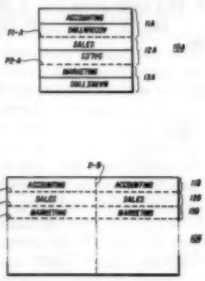
(c) said metallic component having at least 85 weight percent copper.

4,484,401

INSERTS FOR TRANSPARENT IDENTIFICATION TABS

Warren R. Pitts, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Continuation of Ser. No. 330,615, Dec. 14, 1981, abandoned. This application Jun. 6, 1983, Ser. No. 501,472
Int. Cl.³ A44C 3/00
U.S. Cl. 40—2 R **2 Claims**



1. A two-sided insert for an identification tab which comprises
a member having a minor axis and panels on each side of said minor axis for receiving caption information;
said insert being foldable along said minor axis to permit the introduction of the desired caption information in each of the panels without removing the insert from an imprinter that is used to form the captions.

4,484,402

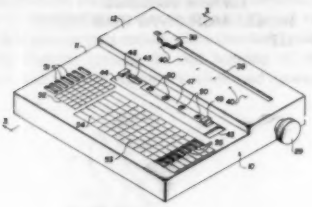
CALENDAR

Taib Kebe, Banque Centrale des Etats, de l'Afrique de l'Ouest B.P. 3159, Dakar, Senegal

Continuation-in-part of Ser. No. 365,914, Apr. 6, 1982, Pat. No. 4,381,614. This application Apr. 4, 1983, Ser. No. 481,985
Int. Cl.³ G09D 3/00
U.S. Cl. 40—107 **6 Claims**

1. A calendar comprising a body portion having a display area, plural independently operable webs on the body portion carrying year and month date indicia, another web on the body portion and being movable and carrying weekday indicia, spaced parallel rotary shaft means connected with all of said webs, drive gears individual to the webs carrying the year and month date indicia and operable to drive such webs indepen-

dently and selectively, another drive gear for the web having said weekday indicia, a drive shaft spaced from and parallel to the axis of said gears, said gears being coaxial, the drive shaft having at least a flat face along its length adjacent to said gears, a single shiftable gear on the drive shaft and being manually movable therealong for selective driving engagement with the gears individual to the webs carrying the year and month date indicia, another non-shiftable drive gear on the drive shaft turning therewith and being in mesh with the gear for driving



the web having the weekday indicia thereon, such web being driven whenever the drive shaft is turned with the shiftable gear to drive any one of the webs having the year and month date indicia thereon, means to turn the drive shaft, all of said webs comprising endless belt webs engaged with said parallel rotary shaft means, and the first-named drive gears and said another drive gear being on one shaft of said spaced parallel rotary shaft means and being drivingly connected with their respective webs.

4,484,403

WEAPON MAGAZINE

Bruno Schwaller, Rohr, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Jan. 5, 1983, Ser. No. 455,849
Claims priority, application Switzerland, Jan. 5, 1982, 36/82
Int. Cl.³ F41C *25/02*
U.S. Cl. 42—50 **12 Claims**

1. A weapon magazine including a housing having opposite, parallel-extending first and second side walls each having an outer face; comprising

(a) manually releasable coupling means on the outer face of said side walls for joining together a first said weapon magazine and a second said weapon magazine in an identical orientation wherein one said side wall of the first weapon magazine faces one said side wall of the second weapon magazine; said coupling means including two spaced male coupling members affixed to said first side wall and two spaced female coupling members affixed to said second side wall; each said male coupling member of said first weapon magazine cooperating with respective said female coupling members of said second weapon magazine; and

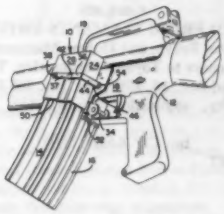
(b) spacer means on the outer face of said side walls to maintain said first and second magazines at a predetermined distance from one another in a joined state thereof.

4,484,404

SPARE MAGAZINE HOLDER

David A. Johnson, Klamath Falls, Oreg., assignor to J.F.S., Inc., Salem, Oreg.

Filed Sep. 13, 1982, Ser. No. 417,409
Int. Cl.³ F41C *27/00, 25/00*
U.S. Cl. 42—90 **15 Claims**



1. A spare magazine carrier for use with a firearm, comprising:

(a) protective means for covering an open end of a spare magazine for a firearm;

(b) attachment means for mounting said protective means on said firearm;

(c) latch means associated with said protective means for releasably holding a loaded spare magazine in a location in said spare magazine carrier in which said protective means covers an open end of said loaded spare magazine;

(d) latch release means associated with said latch means, for releasing said loaded spare magazine from said latch means substantially simultaneously with release of a magazine from operative engagement with said firearm, said latch release means including a pivot shaft and a latch release lever including a catch located thereon, said latch release lever being pivotably mounted on and axially reciprocally movable along said pivot shaft;

(e) a transverse arm extending from said latch release lever toward a magazine release mechanism of said firearm when said carrier is operatively mounted on said firearm; and

(f) biasing means for urging said latch release lever toward a position of rotation about said pivot shaft enabling said catch to hold a loaded spare magazine in said spare magazine carrier and for urging said latch release lever axially along said pivot shaft toward a position of operative engagement of said transverse arm with said magazine release mechanism of said firearm.

4,484,405

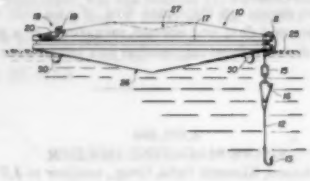
FREE FLOATING FISHING RIG

Milton D. Woods, R.R. 4, Portland, Tenn. 37148

Filed May 30, 1980, Ser. No. 154,886
Int. Cl.³ A01K *69/00*
U.S. Cl. 43—4.5 **8 Claims**

1. A free floating fishing rig comprising in combination, a generally flat plastic float member of discus shape without a retrieval line from the shore that can be sailed discus style into

a desired fishing location off shore, said float having means for attaching a fishing hook rig on an outer edge position so that



the float tilts when a fish bites and keeps the bait moving when the water ripples.

4,484,406

CONNECTED PRISM ELEMENTS SWIVELLINGLY

Takao Matsumoto, Tokyo, and Hajime Matsumoto, Chiba, both of Japan, assignors to Toybox Corporation, Tokyo, Japan

Filed Apr. 15, 1982, Ser. No. 368,830

Claims priority, application Japan, Apr. 27, 1981, 56-61060[U]

Int. Cl.³ A63H *33/00*

U.S. Cl. 446—487 **3 Claims**

1. An amusement device, comprising:

(a) a plurality of hollow prisms rotatably connected in a series;

(b) each prism having two right angled triangular sides in parallel planes, a rectangular base, and first and second square sides, wherein the first square side is the front of the prism, the second square side is the rear of the prism and the prisms are connected in front-to-rear abutting relation;

(c) a plurality of substantially semi-spherical projections formed on the outer surface of each abutted first square side;

(d) a cylindrical swivel joint base extending fom the center of the outer surface of each abutted first square side, wherein each abutted swivel joint base has a square projection located thereon with a first hole formed centrally therein;

(e) a plurality of depressions formed on the outer surface of each abutted second square side;

(f) a second hole formed at the center portion of each abutted second square side, wherein the second hole diameter is substantially similar to the diameter of the cylindrical swivel joint base such that the second hole is capable of flushly receiving a said cylindrical swivel joint base;

(g) a washer having a diameter greater than the diameter of the second hole and having a third hole formed therein which is square-shaped and is capable of flushly receiving the square projection formed on the swivel joint base; and

(h) a screw having a head diameter greater than the distance between two opposing sides of the third hole,

wherein when the cylindrical swivel joint base of a first prism is received flushly by the second hole of a second prism and the square projection on the cylindrical swivel joint base of the first prism is received flushly by the third hole of the second prism, the threaded area of the screw passes through the third hole of the second prism and into the first hole formed in the first prism, such that rotation of the first prism relative to the second prism rotates the screw and washer in unison therewith.

4,484,407

CONNECTION ELEMENT FOR ASSEMBLING TOYS

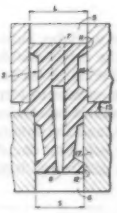
Nils A. I. Petersson, Killeberg, Sweden, assignor to Brio Toy AB, Osby, Sweden

Filed Mar. 28, 1983, Ser. No. 479,466

The portion of the term of this patent subsequent to Dec. 7, 1999, has been disclaimed.

Int. Cl.³ A63H *33/10*; F16B *7/00*

U.S. Cl. 446—122 **3 Claims**



1. A connector element for connecting together toy units which are provided with holes of substantially different diameters within a manufacturing tolerance limit, said connector element comprising in combination, a generally cylindrical shape body of elastically deformable material of a diameter greater than that of said holes thereby to cause a tight fit when inserted into said holes, a coaxially arranged flange of substantially larger diameter than the cylindrical diameter provided between two opposite end portions of the generally cylindrical shaped body each having a circumferential segment, said flange extending outwardly in directions perpendicular to the common axis of said generally cylindrically shaped body and adapted to abut and support opposed surfaces of two toy units to be held together by said connector element and thereby separate them, each of the opposite end portions having a reduced thickness circumferential segment axially disposed between the end and the flange at different circumferential positions about the cylindrical body adapted to permit greater flexibility of the cylindrical body, and two axially disposed slots disposed in the cylindrical body on opposite sides from the circumferential segments, and extending from opposite ends into the cylindrical body to permit by the connector element body resiliency a reduction of the size of the cylindrical body at a single end when under a force thereby for positioning the connector element ends into the holes of the toy units and to allow the connector to securely connect two toy units with holes of varying diameters.

4,484,408

TALKING FIGURE PLAY SET

A. Edward Fogarty, and Bonnie R. Fogarty, both of Sarasota, Fla., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jul. 29, 1982, Ser. No. 403,147

Int. Cl.³ A63H *5/00*

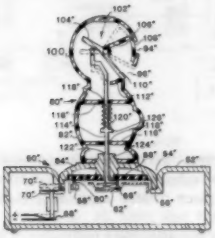
U.S. Cl. 446—299 **6 Claims**

5. A talking figure play set, comprising:

(a) a record player having a housing with a geometrically regular opening, a rotating tone arm having an upwardly pointing stylus, a rotating tone arm shield mounted above

said rotating tone arm, said rotating tone arm shield having a cam fixedly mounted on its upper surface, and a support means for supporting the base of a three-dimensional figure, said rotating tone arm, rotating tone arm shield and support means being recessed in said geometrically regular opening in said housing;

(b) at least one three-dimensional figure comprising a body and an open-bottom base having a phonograph record fixedly mounted therein, said phonograph record having spiral grooves with a sound recording thereon, said open-bottom base being geometrically configured such that it rests on said support means when inserted in said geometrically regular opening in said housing of said record player and remains stationary when said upwardly point-



ing stylus of said rotating tone arm engages said spiral grooves of said phonograph record and rotates during operation of said record player, said body having a forked lever pivotedly mounted in its interior, said forked lever having a tail piece, an upper prong with a curved eye plate, a lower prong with a curved chin plate, and said body further having an operating arm moveably in its interior, said operating arm having its upper end in contact with said tail piece of said forked lever and its lower end in contact with the upper surface of said cam fixedly mounted on said rotating tone arm shield of said record player such that said curved eye plate and said curved chin plate are continuously moved during operation of said record player.

4,484,409

PREVENTION OF FREEZING AT MODERATE SUPERCOOLING USING SYNTHETIC POLYMERIC ICE NUCLEATION INHIBITORS

Gerald Caple, and Richard G. Layton, both of Flagstaff, Ariz., assignors to University Patents, Inc., Norwalk, Conn.

Filed Mar. 29, 1982, Ser. No. 363,321
Int. Cl.³ A01G *1/00*
U.S. Cl. 47—2 **18 Claims**

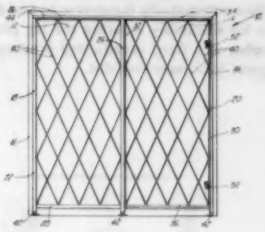
1. A method for protecting light frost-sensitive plants against frost injury comprising applying to the plants a solution of a synthetic polymer having covalently bound to its main backbone chain both pendant hydrophobic groups and pendant hydrophilic groups, the ratio of and average intermolecular spacing between said hydrophobic groups and said hydrophilic groups and the molecular weight of said polymer combining to provide said polymer with a limited room temperature water solubility within the range of from about 1 g/ml to about 100 mg/ml, with the proviso that said pendant hydrophilic groups may not be pyrrolidone; said application being at a time sufficiently prior to the onset of freezing temperature and in a sufficient concentration of said polymer so as to inhibit the ice-nucleating activity of the ice-nucleating bacteria normally present on the plants, thereby reducing the temperature at which frost injury occurs.

4,484,410

INTERIOR SECURITY DOOR PANEL

Thomas A. English, Oklahoma City, Okla., assignor to Interior Security Corp., Oklahoma City, Okla.

Filed Sep. 30, 1982, Ser. No. 430,345
Int. Cl.³ E05B *65/04*
U.S. Cl. 49—63 **4 Claims**



1. An interior security door panel for receipt inside the door frame of a stationary glass door and a sliding glass door and adjacent thereto, the door panel preventing the unlawful entrance through the door, the panel comprising:

a stationary panel frame having a first and second side member and an upper and lower member, the stationary panel frame adjacent the stationary glass door;

a sliding panel frame having a first and second side member and an upper member and lower member, the sliding panel frame adjacent the sliding glass door;

cross members attached to the stationary panel frame and sliding panel frame, the cross members disposed in a spaced relationship to each other with the spacing small enough to prevent human extrance therethrough;

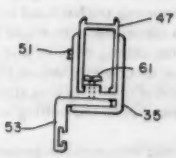
a "U" shaped channel attached along the top of the door frame, the "U" shaped channel receiving the upper member of the stationary panel frame and sliding panel frame therein, the "U" shaped channel further having "L" shaped roller hangers extending downwardly therefrom for receiving rollers attached to a roller arm, the roller arm attached to the top of the sliding panel frame, the rollers engaging the roller hangers and allowing the sliding panel frame to be moved laterally in front of the stationary panel frame.

4,484,411

ADJUSTABLE SHOWER DOOR JAMB ASSEMBLY

Arnold O. Rystad, Kelseyville, Calif., assignor to Work Right Products, Inc., Oakland, Calif.

Filed Jun. 10, 1982, Ser. No. 386,923
Int. Cl.³ E06B *1/04*
U.S. Cl. 49—505 **11 Claims**



1. A door jamb assembly adjustable in a transverse plane comprising

a jamb member having a jamb surface lying substantially in the plane of said door when closed, and an adjustment leg portion opposite said jamb surface extending perpendicularly in a plane substantially transverse to said jamb surface,

a jamb support including a jamb support base and a mount-

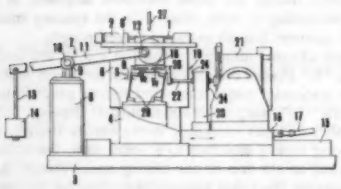
ing frame structure, said jamb support base having a transversely oriented receiving slot open to one side of and extending laterally through said base, said receiving slot being sized to permit sliding engagement therein of the extending leg portion of said jamb member so that said jamb member can be moved relative to said jamb support in said receiving slot and so that such movement will be in a plane substantially transverse to said door jamb surface, means for releasably securing the leg portion of said jamb member in a fixed preadjusted position within said jamb support base receiving slot.

4,484,412

METHOD AND APPARATUS FOR CUTTING HARD AND BRITTLE MATERIAL USING SYSTEM FOR APPLYING VIBRATION IN TWO DIRECTIONS

Ken-ichi Ishikawa, 2-66-2, Nukatani, Kanazawa-shi, Ishikawa-Ken, Japan

Filed Jul. 15, 1982, Ser. No. 398,591
Claims priority, application Japan, Jul. 27, 1981, 56-117532
Int. Cl.³ B24B *25/00*
U.S. Cl. 51—157 **5 Claims**



2. A cutting apparatus with a system for applying vibration in two directions for cutting a hard and brittle material comprising in combination:

a tool frame to which a strip-shaped flat cutting tool is secured in a stretched state;

a guide mechanism for guiding said tool frame in the direction in which the flat cutting tool cuts into said material;

a work pressure adjustment mechanism for adjusting cutting pressure to be exerted on said flat cutting tool through said tool frame and the cutting speed of the cutting tool;

a mount for mounting the hard and brittle material to be cut;

a slider which carries said mount and is slidable in directions parallel to the cutting edge of said flat cutting tool;

a reciprocating motion mechanism for imparting a reciprocating motion of relatively long stroke to said slider in said directions parallel to the cutting edge of the flat cutting tool;

a first and second vibration component applying mechanism mounted on said slider for applying a first small-amplitude vibration to said mount in a direction parallel to the reciprocating motion, which reciprocating motion is made in a longer period than said first small amplitude vibration, and for simultaneously applying a second small-amplitude vibration to said mount in a direction in parallel with the direction in which the flat cutting tool cuts into the material; and

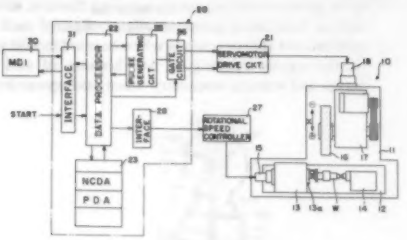
a work liquid supply mechanism for supplying a abrasive grain fluid to the cutting part of said material being cut.

4,484,413

CONTROL APPARATUS FOR A GRINDING MACHINE

Katsumi Yamamoto, Takahama; Yuichiro Komatsu, and Ikurou Hamada, both of Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 26, 1983, Ser. No. 488,806
Claims priority, application Japan, May 3, 1982, 57-74165
Int. Cl.³ B24B *5/42*
U.S. Cl. 51—165.71 **8 Claims**



1. A control apparatus for a grinding machine wherein a workpiece is ground by relatively infeeding a rotating grinding wheel against a workpiece rotated about an axis, said control apparatus comprising:

data input means for inputting data indicative of the shape of said workpiece;

calculation means for calculating the rigidity of said workpiece based upon said workpiece shape data input by said data input means; and

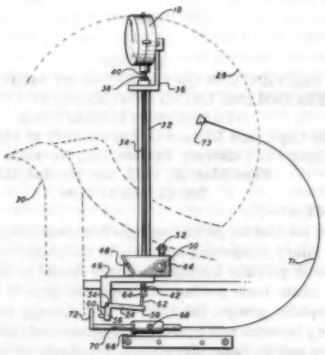
modification circuit means responsive to said calculated rigidity of said workpiece for modifying a grinding condition in which said workpiece is ground.

4,484,414

SHAFT GRINDING GAGE

Thomas A. Skolek, Kosciusko Rd., R.D. #1, Whitehouse Station, N.J. 08889

Filed Jun. 9, 1982, Ser. No. 386,716
Int. Cl.³ B24B *49/00*
U.S. Cl. 51—165.75 **12 Claims**



1. A grinding gage assembly for grinding of shafts at machines providing a stationary support of the axis for the rotating shaft and a movable support for the rotating grinding wheel comprising

a block attached to the stationary support of the axis;

an angle transfer lever having two arms running at about a 90 degree angle from a hinge axis disposed at the movable support and the end of one of the arms contacts the block

in an about tangential direction relative to the hinge point and where the hinge axis is about vertical to the direction of motion of the movable support;

a motion transmitting rod disposed at the movable support in a vertical direction and contacting with one end in the moving longitudinal direction of the rod the second arm of the angle transfer lever in about tangential direction such that the angle transfer lever transmits any relative motion of the block onto the motion transmitting rod and;

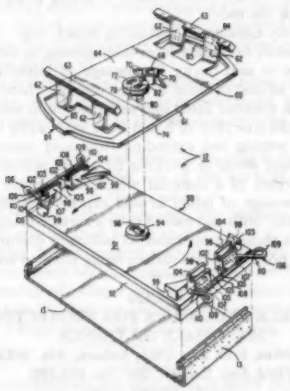
a dial indicator engaging the second end of the motion transmitting rod to display the relative change in position of the motion transmitting rod.

4,484,415

SANDING PLATEN SUPPORT FOR IN-LINE SANDER

William C. Dicke, Easley, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Nov. 25, 1983, Ser. No. 555,325
Int. Cl.³ B24B *23/00*
U.S. Cl. 51—170 TL **5 Claims**



1. In an in-line sander for moving a strip of sand paper in a linear path and having a housing, a platen for supporting said strip of sand paper for operating upon a work material, and means for actuating said platen into linear motion, an improvement comprising:

a. a platen support fashioned from a resilient material and including a base portion for attachment to said platen, at least one leg extending from said base portion to a free end contiguous said housing for attachment thereto, said at least one leg having a flexibility implemented by a low moment of inertia in the direction of said linear path, said at least one leg further having a rigidity implemented by a high moment of inertia in a direction transverse to said linear path;

b. means on said housing and on said free end of said at least one leg for connecting said platen support to said housing; and,

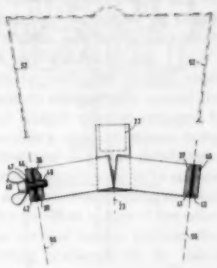
c. means connecting said actuating means to said platen support for influencing linear motion thereof and of said platen attached thereto.

4,484,416

SUPPORT FOR MOUNTING SPECTACLES

Fritz Zenss, Moltkestrasse 8, 7031 Gartringen, Fed. Rep. of Germany

Filed May 3, 1982, Ser. No. 373,879
Claims priority, application Fed. Rep. of Germany, May 7, 1981, 3118026
Int. Cl.³ B24B *41/06*
U.S. Cl. 51—217 R **11 Claims**



1. In a support for mounting spectacle frames in polishing drums, comprising a metallic crossbar device with mounting means for the end regions of spectacle frame yokes, said support having space for a number of adjacent spectacle frames oriented in about the same direction, the improvement wherein:

(a) said crossbar device comprises two crossbars which run parallel to each other and are spaced apart at a distance corresponding to the spacing of the end regions of the spectacle frame yokes, and said crossbars have end regions and have cross yokes at said end regions which rigidly connect said crossbars together at a mid symmetry plane of said cross bar device;

(b) each of said crossbars comprises two adjacent, flexurally stiff partial bars and clamping means for clamping one partial bar like a vise against an adjacent partial bar;

(c) said partial bars have a maximum clamping height which corresponds to the unprocessed length of the spectacle frame yoke end regions and

(d) the said mid plane of two adjacent partial bars forms an acute angle with said mid symmetry plane of said cross bar device.

4,484,417

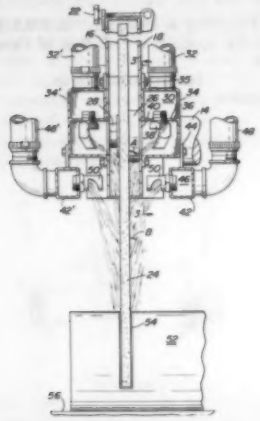
SAWING APPARATUS

Robert H. Klingerman, Knoxville, Tenn., assignor to W. J. Savage Company, Knoxville, Tenn.

Filed Nov. 22, 1982, Ser. No. 443,277
Int. Cl.³ B24B *55/02*; B28D *7/02*
U.S. Cl. 51—267 **11 Claims**

1. Sawing apparatus comprising a housing supporting a rotatable saw blade, a portion of the blade projecting below the housing for contacting material to be cut, means including two sets of nozzles on each side of the housing for simultaneously directing a coolant liquid to opposite sides of a portion of the blade, each set of nozzles including an upper row of nozzles for directing a sharply defined high impact spray pattern and a lower row of nozzles for directing a low impact flat spray pattern, the nozzles of the lower row being staggered with respect to the nozzles of the associated upper row, the nozzles of the upper row being spaced apart so that their spray patterns

do not overlap whereby laminar air flow on the blade surface is interrupted and turbulence is created in the spaces between



the patterns of the nozzles of the upper row for subsequent contact with spray patterns of nozzles of the lower rows.

4,484,418

LAP FOR THE POLISHING OF GEMSTONES

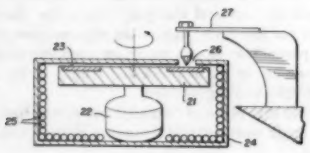
Shymon Reich, and David Vofsi, both of Rehovot, Israel, assignors to Yeda Research & Development Company, Ltd., Rehovot, Israel

Division of Ser. No. 386,677, Jun. 7, 1982,. This application May 23, 1983, Ser. No. 497,275

Claims priority, application Israel, Jun. 5, 1981, 63054

Int. Cl.[3] **B24B** *1/00, 55/02;* **B24D** *7/10*

U.S. Cl. 51—283 R **5 Claims**



1. A process for the polishing of gemstones, the process comprising

providing a scaife having a rotary plane disc provided on its upper surface with a frozen liquid matrix containing abrasive powder, said frozen matrix having a phase transition temperature between solid/liquid chosen to regulate the local temperature created at a point of contact between said matrix and a gemstone during polishing, said frozen matrix also having a high enthalpy of phase transition from solid to liquid;

rotating said scaife at a high rate; and applying a gemstone to be polished against the rotating frozen liquid matrix containing abrasive powder to effect polishing of said gemstone, the contact of said gemstone against said frozen liquid matrix allowing momentary local melting of said matrix at a point of contact between said matrix and the gemstone being polished when said local temperature meets or exceeds said phase transition temperature followed immediately by refreezing, said local melting thus preventing the heating of the gemstone during polishing to a temperature substantially above said phase transition temperature.

4,484,419

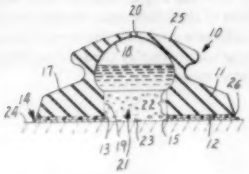
BLOCK FOR WET ABRADING

Conrad T. Freerks, Maplewood, assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Oct. 7, 1981, Ser. No. 309,253

Int. Cl.[3] **B24D** *15/00*

U.S. Cl. 51—391 **5 Claims**



1. An abrading block especially suited for manual abrading operations, said abrading block comprising

(1) a body comprising:

(a) a bottom surface having an opening therein and being adapted to hold a sheet of abrasive material, having an opening therethrough, in a substantially planar position with an abrasive working face exposed and with the opening through said sheet of abrasive material aligned with the opening in said bottom surface;

(b) an opposite surface capable of being grasped by the hand of the user;

(c) a cavity capable of containing liquid; and

(d) a conduit extending from said opening in said bottom surface to said cavity for passage of liquid from said cavity to said opening in said bottom surface; and

(2) a porous member fitted into said conduit to substantially prevent the free flow of liquid from said cavity having an exposed wiping end extending from said opening to or beyond said abrasive working face, said porous member being formed of a material which will permit the controlled passage of liquid as said exposed end is brought into contact with and passed over a surface being finished during an abrading operation in sufficient quantity to wet at least a portion of said surface being finished with liquid.

4,484,420

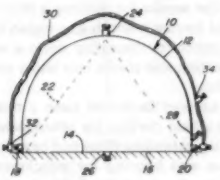
FLEXIBLE ENCLOSURE FOR PROTECTING MATERIALS OR THINGS

Charlie M. Stokes, P.O. Box 1963, Auburn, Ala. 36830

Filed Aug. 1, 1980, Ser. No. 174,592

Int. Cl.[3] **E04B** *1/34*

U.S. Cl. 52—2 **3 Claims**



1. A flexible enclosure for materials or things comprising an enlarged flexible body member constructed of flexible material and including an unobstructed interior forming an unobstructed enclosed space, said body member being supportable by gas and including means for filling the body member with gas and means regulating the pressure in the enclosure, said body member including means enabling placement of materials or things into the enclosure and removal of materials or things from the enclosure, and a second flexible enclosure comprising

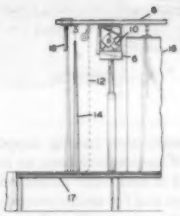
an enlarged flexible body member spaced from the first mentioned body member and in enclosing relation thereto, means filling the space between the body members with gas and means regulating the pressure in the space between the body members.

4,484,421

TRAVELING STAGE

Richard B. Williams, 116 Lexington Ave., New York, N.Y. 10016, and Thomas V. Janus, 300 Riverside Dr. #6C, New York, N.Y. 10025

Filed Sep. 29, 1982, Ser. No. 427,518
Int. Cl.³ E04H *3/26*
U.S. Cl. 52—7 **5 Claims**



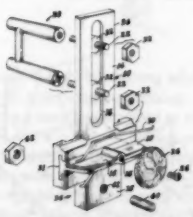
1. A traveling stage for positioning on a flooring comprising:
(a) three spaced apart main trusses positioned in a parallel relationship to each other and the flooring on which the stage is positioned,
(b) vertical columns, at each end of each truss, resting on the flooring on which the stage is positioned, each column being perpendicular to the flooring and the truss it supports,
(c) means raising the truss from the flooring at the base of the vertical column to the top of the vertical column and holding the truss in that position,
(d) a plurality of I-beams spanning the distance between the trusses and fastened to the trusses,
(e) lighting means carried within the trusses and curtain support means with curtains carried on the I-beams, and
(f) a plurality of collapsible table-like structures being positioned on the flooring under at least one of the trusses to form a stage area raised above the flooring.

4,484,422

SLAB-HANGING MEANS AUXILIARY SUPPORT MEANS

Lewis L. Roberts, Indianapolis, Ind., assignor to Mercury Development Corporation, Indianapolis, Ind.

Filed Sep. 23, 1982, Ser. No. 421,891
Int. Cl.³ E04H *13/00*
U.S. Cl. 52—137 **6 Claims**



1. Slab-hanging means for removably supporting a vertically-arranged series of slabs upon associated supporting structure, the slab-hanging means having a vertical hanger portion for attachment to the associated supporting structure and having outwardly extending from a relatively low portion of the vertical hanger portion a ledge means upon which seat the contiguous portions of a pair of the slabs, there being provided fastener means held by the associated supporting structure and having outwardly-extending portions supportingly engageable with the vertical hanger portion for securing the slab-hanging means to the associated supporting structure in selected position outwardly of the associated supporting structure for accommodation of irregularities thereof yet keep a desired flushness of the series of slabs, and means for retaining the slabs in supported position on the ledge means,

the improvement, for such slab-hanging means, of an auxiliary support means substantially spaced from the portion of the vertical hanger portion engaged by the fastener means, the auxiliary support means being between the supporting structure and the slab-hanging means, and being of adjustable nature so as to be supportingly engageable with the associated supporting structure regardless of whatever is the outward nature of the selected position of support of the vertical hanger portion, the auxiliary support means being connected to the slab-hanging means and providing a horizontal thrust engagement against the associated supporting structure,

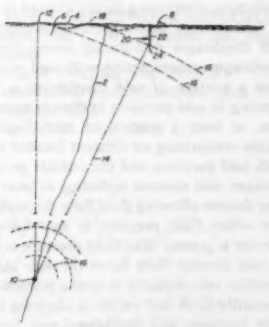
the said auxiliary support means thus serving to provide a bracing support by said horizontal thrust engagement, acting upwardly through the slab-hanging means, to support the outwardly-extending portions of the fastener means against sagging or deflection of the fastener means due to the weight of the slabs upon the ledge means, by sustaining the force of the weight of the slabs.

4,484,423

SEISMIC SHIELD

Cole R. McClure, Jr., Los Altos Hills, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.

Filed Oct. 26, 1981, Ser. No. 314,823
Int. Cl.³ E04H *9/02*; E02D *27/34*
U.S. Cl. 52—167 **21 Claims**

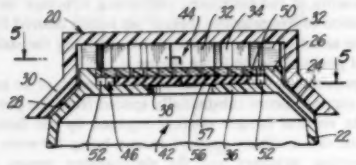


10. In combination with a structure resting on the earth, a shield for attentuating an earthquake's effects on the structure comprising a generally vertically disposed subterranean wall made of material sustantially incapable of transmitting shear waves, said wall being supported by and conforming to the shape of a trench formed in the earth, said wall extending at least about 100 meters into the earth and being spaced apart from the building in a direction along which seismic surface waves are to be intercepted.

4,484,424
ROOF VENT

Duane D. Logsdon, P.O. Box 186, Stanton, Calif. 90680

Filed Aug. 17, 1982, Ser. No. 408,821
Int. Cl.³ F24F 7/02; E04F 17/04
U.S. Cl. 52—199 10 Claims



1. A roof vent structure which comprises:

a plate and housing integrally formed together as a unit;

said plate having an opening;

said housing formed as an upstanding element having a hollow interior and upper and lower edges, said housing connecting to said plate about its lower edge around said opening in said plate such that said opening is continuous with said hollow interior;

said housing including a partition integrally formed with the remainder of said housing, said partition located within said hollow interior spaced downwardly from said upper edge and dividing the hollow interior of said housing into an upper section and a lower section, said partition including at least one opening extending between and connecting said upper and lower sections of said hollow interior, said partition having an upper surface located in said upper section;

an imperforate diaphragm independent of said partition and contiguously resting directly against said upper surface of said partition and sealing said opening in said partition against fluid movement from said upper section to said lower section of said interior when said fluid pressure in said upper section is greater than fluid pressure in said lower section of said interior;

a diaphragm positioning means located in said upper section of said interior and above said imperforate diaphragm, said diaphragm positioning means for maintaining said diaphragm in association with said partition such that at least a portion of said diaphragm is located over said opening in said partition in direct contact with said partition, at least a portion of said diaphragm positioning means comprising an element located in association with both said partition and the outside periphery of said diaphragm, said element including at least one fluid passageway therein allowing fluid flow through said element such that when fluid pressure in said lower section of said interior is greater than fluid pressure in said upper section of said interior fluid flows through said opening in said partition and displaces at least a portion of said diaphragm upwardly from said partition allowing for continued fluid flow between said diaphragm and further through said passageway in said element into said upper sections;

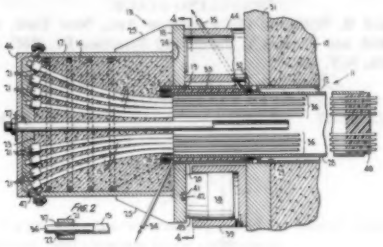
cap means attaching to said upper edge of said housing, said cap means protecting said upper section of said interior against ingress of foreign material into said upper section of said interior;

at least one of said cap means or said upper edge of said housing including at least one ambient passageway connecting said upper section of said interior to the ambient, said cap means protecting said ambient passageway of downwardly descending foreign material.

4,484,425
ANCHORAGE OF CABLES

Jean N. Muller, Tallahassee, Fla., assignor to Figg and Muller Engineers, Inc., Tallahassee, Fla.

Filed Jul. 21, 1982, Ser. No. 400,266
Int. Cl.³ E04C 3/10
U.S. Cl. 52—223 R 6 Claims

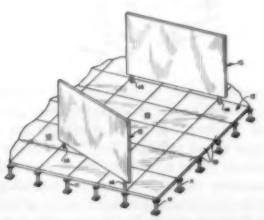


1. In a bridge construction having support cable means including a plurality of tension members, an anchorage system for anchoring one end of said cable means relative to a structural bridge component and for simultaneously tensioning said members, said cable means extending through an opening in said bridge component, a concrete anchorage block, anchor heads having a plurality of spaced passages extending outwardly of one end wall of said block, a plurality of hollow tubes in registry with said passages extending therefrom and terminating at an end wall of said anchorage block lying opposite said one end wall, said tubes being in mutual contact at said opposite end wall, a first bearing plate lying against said opposite end wall and having a central opening, said tension members extending through said tubes and through said passages, means securing said tension members to said anchor heads, a tubular sheath extending from said opposite end wall through said central opening of said first bearing plate and encasing said tension members, a second bearing plate having a central opening through which said sheath extends and bearing against said structural bridge component, said bearing plates being in spaced apart parallel relationship, extendable means acting between said bearing plates for spacing them a predetermined distance apart to thereby simultaneously tension said members as said anchorage block is shifted away from said second plate, and a plurality of spacers having a length equal to said predetermined distance being disposed between said plates for maintaining said predetermined distance.

4,484,426
SUPPORT SYSTEM FOR LANDSCAPE SCREENS

Lawrence P. Simms, Lakewood, Ohio, assignor to Donn Incorporated, Westlake, Ohio

Filed Oct. 21, 1981, Ser. No. 313,387
Int. Cl.³ E04B 2/82
U.S. Cl. 52—239 19 Claims



18. A floor-mounted furniture member comprising in combi-

nation a plurality of floor panels, each providing a floor surface and which cooperate to provide a floor surface, said panels being individually removable and installable, at least some of said panels providing sockets open through said floor surface thereof, a mounting bracket secured to said furniture member, a plurality of studs adjustably connected to said mounting bracket providing an interfitting connection permitting adjustment of said studs to a plurality of positions with respect to said bracket and for locking said studs in such positions, said studs being adjustable with respect to said bracket so that at least two spacd studs are adjusted to spaced positions corresponding to the spacing between at least two associated sockets and are positioned in said two associated sockets, said studs, sockets and brackets providing sufficient strength to support said furniture member against normal forces encountered and being separable to permit repositioning of said furniture item with respect to said floor panels.

4,484,427

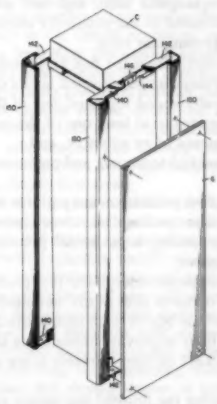
METHOD AND APPARATUS FOR ATTACHING FURRING TO COLUMNS

Robert C. Crites, P.O. Box 513, Euless, Tex. 76039, and Wilbur R. Youngs, Allen, Tex., assignors to Robert C. Crites, Euless, Tex., a part interest

Continuation-in-part of Ser. No. 355,703, Mar. 8, 1982,. This application Apr. 20, 1982, Ser. No. 370,175

Int. Cl.³ E04C *3/30;* E04B *1/94*

U.S. Cl. 52—261 **14 Claims**



1. A system for attaching furring adjacent a walled structure extending from a decking comprising:

a clip having a base leg attached to the decking adjacent the structure and a corner angle leg extending from said base leg with a portion thereof for substantially longitudinal alignment with the structure;

means for attaching said clip adjacent the structure with the longitudinal axis of the corner angle leg substantially parallel to the longitudinal axis of the structure, said corner angle leg receiving one end of a corner angle thereon, the corner angle serving to receive fasteners therein for holding furring adjacent the structure.

4,484,428

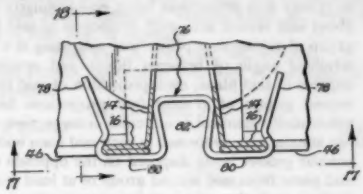
SUSPENDED CEILING GRID SYSTEM

Gale E. Sauer, Williamsville, N.Y., assignor to Donn Incorporated, Westlake, Ohio

Continuation-in-part of Ser. No. 214,250, Dec. 8, 1980,. This application Mar. 17, 1982, Ser. No. 358,894

Int. Cl.³ E04B *5/52*

U.S. Cl. 52—311 **12 Claims**



1. In a suspended ceiling system having spaced, parallel main runners and spaced, parallel cross runners positioned perpendicularly to said main runners to define a rectangular grid pattern for supporting rectangular ceiling tiles, each of said runners having a pair of webs and tile supporting flanges extending outwardly from the lower end portions of each of said webs to peripherally support said rectangular panel members, each of said runners further having a downwardly opening recessed area between said webs, the combination therewith of clip means carried by said main runners in underlying relationship at the intersection of said main and cross runners, said clip means being capable of spacing the tile supporting flanges of the main runners a predetermined distance apart, each clip means including normally horizontally disposed sections extending below said flanges of said main runners, an inverted upwardly extending substantially U-shaped portion between the horizontally disposed sections, said U-shaped portion engaging the inner surfaces of said webs above said flanges of said main runner, and upwardly extending fingers at the outer end of each of said horizontally disposed sections, said fingers being provided with engaging means capable of engaging the outer edges of the outwardly extending tile supporting flanges to hold the clip means in its assembled position.

4,484,429

CONNECTOR FOR A FRAMEWORK STRUCTURE

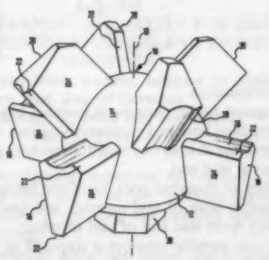
Colin J. S. Stephenson, Flat 5, 56 Claremont Rd., Highgate, London, N.6., England

Filed Aug. 4, 1981, Ser. No. 289,855

Claims priority, application United Kingdom, Aug. 7, 1980, 8025734; Feb. 20, 1981, 8105522

Int. Cl.³ F16B *7/00;* E04B *1/58*

U.S. Cl. 52—648 **14 Claims**



1. A framework structure comprising:

(1) a plurality of connectors, wherein each connector of said plurality of connectors comprises:

(a) a main body having a central axis;

(b) a first group of at least four projections extending outwardly from each said main body, said first group of at least four projections being equi-angularly spaced about said central axis, each projection of said first group of at least four projections extending from said main body in a plane normal to said central axis;

(c) a second group of at least four projections extending outwardly from each said main body, said second group of at least four projections being equi-angularly spaced about said central axis, each projection of said second group of at least four projections extending at a predetermined angle of between fifteen and seventy-five degrees to said plane, each projection of said first and second groups of at least four projections being of substantially identical noncircular cross-section;

(d) an annular groove formed in each said main body, said annular groove being disposed on the opposite side of said plane from said second group of at least four projections such that said annular groove selectively receives an end of a tubular member for interconnection of said main body with said tubular member; and

(2) a plurality of elongate members for connecting together said plurality of connectors to form said framework structure, each elongate member of said plurality of elongate members having substantially cylindrical tubular ends selectively interconnectable with said projections of said first and second groups of at least four projections, said substantially cylindrical tubular ends being formed of a deformable material such as to form an interference fit between said substantially cylindrical tubular ends and said projections of said first and second groups of at least four projections.

4,484,430

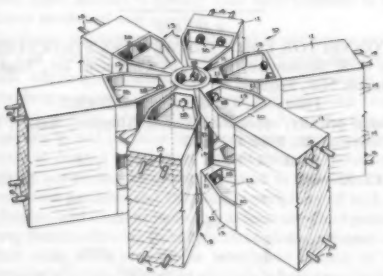
CONNECTOR FOR A STRUCTURAL MEMBER

Wendell E. Rossman, 3137 N. 53 St., Phoenix, Ariz. 85018, assignor to Wendell E. Rossman, Phoenix, Ariz.

Continuation-in-part of Ser. No. 291,839, Aug. 10, 1981, abandoned. This application Jun. 18, 1982, Ser. No. 389,891

Int. Cl.³ E04C *3/30*

U.S. Cl. 52—726 **19 Claims**



6. In combination,

an elongated timber structural member having at least one longitudinal bore in a compressive stress region at at least one end and at least one longitudinal bore in a tensile stress region at said end;

a plurality of threaded rods, each rod being embedded in a respective bore of said member and having one end extending from said end of said member;

at least one metallic connector disposed at said end of said member, said connector having a base with at least one aperture facing said end of said member to receive at least one of said rods, an apex spaced from said base, a pair of conveying side walls between said base and said apex and a web extending between said base and said apex; and

a nut threaded onto an end of each rod received in said connector to secure said connector to said member.

4,484,431

APPARATUS FOR ERECTING, FILLING AND SEALING BAG-IN-BOX PACKAGES

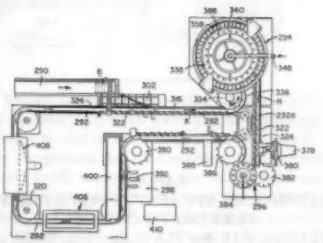
Masataka Okushita, Tokyo, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Division of Ser. No. 236,547, Feb. 20, 1981, Pat. No. 4,386,923. This application Sep. 24, 1982, Ser. No. 423,469

Claims priority, application Japan, Feb. 22, 1980, 55-21176; Feb. 22, 1980, 55-22041[U]; Apr. 24, 1980, 55-56090[U]; May 22, 1980, 55-68186; Jul. 22, 1980, 55-104127[U]

Int. Cl.³ B65B *43/36, 3/02*

U.S. Cl. 53—170 **11 Claims**



1. An apparatus for fabricating and filling bag-in-box packages, comprising:

(a) means for feeding a succession of semifinished bag-in-box packages along a first predetermined path, each semifinished bag-in-box package comprising

(1) a box having a set of four panels connected together and forming a rectangular tube, and two sets of end flaps foldably connected to the panels for closing the opposite ends of the rectangular tube,

(2) a bag disposed within the box and formed by two substantially rectangular, superposed layers of flexible material hermetically sealed together, one of the layers of the bag being secured to at least one of the inside surfaces of the box by means of an adhesive, and

(3) a fitment attached to the bag and projecting outwardly of the box;

(b) means on the first predetermined path for inflating the bag of each semifinished package into close internal contact with the box by introducing a gas under pressure into the bag through the fitment;

(c) means on the opposite sides of the first predetermined path for closing the opposite ends of the rectangular tube, formed by the panels of the box of each semifinished package, with the sets of end flaps to provide finished bag-in-box packages;

(d) a series of package carriers movable along a second predetermined path;

(e) means for loading the finished bag-in-box packages one on each package carrier, with the fitment of each package directed substantially upwardly;

(f) means for feeding the package carriers, together with the packages loaded thereon, along the second predetermined path;

(g) means on the second predetermined path for filling the packages on the package carriers with a desired product through the fitments;

(h) means on the second predetermined path for capping the fitments of the filled packages on the package carriers with dispenser mechanisms; and

(i) means for unloading the filled and capped packages from the package carriers on the second predetermined path.

4,484,432
BOTTOM-FOLDING PACKAGING MACHINE

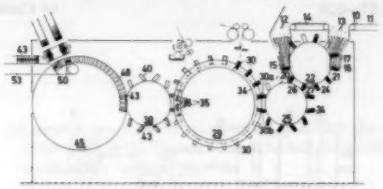
Manfred Oberdorf, Gevelsberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Alfred Schmermund GmbH & Co., Gevelsberg, Fed. Rep. of Germany

Filed Dec. 4, 1981, Ser. No. 327,496

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1980, 3046065

Int. Cl.³ B65B *19/24*

U.S. Cl. 53—575 **12 Claims**



1. Apparatus for packaging cigarettes comprising:

wrapping means, said wrapping means including a rotatable drum and a plurality of hollow mandrels equally spaced about the periphery thereof, said mandrels being sized to receive preformed blocks of cigarettes, said wrapping means further comprising means for applying a wrapper around the mandrels and folding and gluing the wrapper to form adhesively closed first package ends;

means for closing the second ends of the packages, said second end closing means including a rotary drum having open cells thereon, said second end closing means also including means for folding and gluing the wrappers to define second adhesively closed package ends, the cells of said second end closing means drum being grouped in angularly related pairs, the orientation of the cells comprising each of said pairs being such that the cells of each pair may be simultaneously aligned with a pair of mandrels of said wrapping means drum;

means for drying the glue which retains the first and second package ends in the closed condition, said drying means including at least first and second axially spaced and simultaneously rotatable cell array defining means, the cells of said arrays being greater in number than the cells of the second end closing means drum the angularly off-set orientation of the cells of the second end closing means permitting said second end closing means cells to be brought into alignment with spacially separated cells of said drying means first array;

means for imparting synchronized stepwise movement to said wrapping means and second end crossing means drums and to said drying means cell array defining means, said movement imparting means causing said wrapping means drum and drying means cell array defining means to rotate in increments of one cell division and causing said second end closing means drum to rotate in increments of two cell divisions with every second step of movement of said wrapping means drum;

means for supporting said wrapping means, second end closing means and drying means in partial registration whereby packages partly formed on mandrels in said wrapping means may be transferred into cells of said second end closing means drum and packages may be transferred from said second end closing means drum cells into cells of the first array of said drying means;

first ram means for simultaneously transferring a pair of partially formed cigarette packages from a pair of mandrels on said wrapping means drum into the cells of one of said pairs of cells of said second end closing means drum;

second ram means for simultaneously transferring packages from the cells of one of said pairs of cells of said second end closing means drum into a pair of spacially displaced cells of said drying means first array; and

third ram means for transferring packages from a pair of cells of said drying means frist array into a pair of spacially displaced cells of said drying means second array.

4,484,433
METHOD FOR MANUFACTURING A WRAPPED YARN, A WRAPPED YARN, AND AN APPARATUS FOR CARRYING OUT THE METHOD

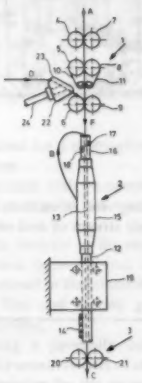
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, and Hans Stahlecker, Haldenstrasse 20, 7334 Süssen, both of Fed. Rep. of Germany

Filed Dec. 6, 1982, Ser. No. 447,102

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1981, 3148940

Int. Cl.³ D02G *3/28, 3/04*

U.S. Cl. 57—15 **26 Claims**



1. A method for manufacturing a wrapped yarn from a sliver and at least one endless yarn and a binding thread winding about both the sliver and the endless yarn, comprising the steps of combining the sliver and the endless yarn travelling at substantially the same velocity and substantially parallel to one another, subsequently exposing the same together to only a false twist and wrapping the same with the binding thread.

25. A wrapped yarn consisting of a combination of a sliver component and of a multi-filament yarn component held together by a binding thread, in which the sliver component and the multi-filament yarn component are substantially devoid of any twist, and the binding thread is considerably thinner than the two other components of the wrapped yarn.

4,484,434
MOVABLE CLEANING APPARATUS FOR DRAFTING MECHANISM OF SPINNING AND TWISTING MACHINES

Winfried Rümmele, Bürs, Austria, assignor to Sohler Airtex GmbH, Wangen, Fed. Rep. of Germany

Filed Aug. 18, 1982, Ser. No. 409,171

Int. Cl.³ D01H *11/00*

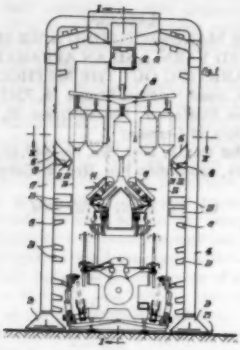
U.S. Cl. 57—304 **8 Claims**

1. A movable cleaning apparatus for directly removing concentration of fiber fly from the working region of the drafting mechanisms of spinning and twisting machines, said apparatus comprising:

first air jets arranged above and below said working region of said drafting mechanism, each of said first air jets being adapted to produce a horizontal air veil;

a second air jet adapted to produce a flat air stream which extends essentially at right angles to said horizontal air

veil of said first air jets, and approximately between them; and



a vertically extending row of suction mouthpieces on each side of said flat air stream of said second air jet.

4,484,435

METHOD AND DEVICE FOR THE PRODUCTION OF TEXTILE FIBRE YARNS

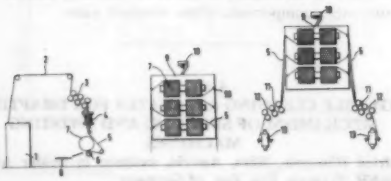
Maag Fritjof, Fasanenstrasse 31, D-6233 Kelkheim/Taunus, Fed. Rep. of Germany

PCT No. PCT/EP81/00078, § 371 Date Mar. 12, 1982, § 102(e) Date Mar. 12, 1982, PCT Pub. No. WO82/00304, PCT Pub. Date Feb. 4, 1982

PCT Filed Feb. 28, 1981, Ser. No. 361,911

Int. Cl.³ D02G *3/04, 3/38*

U.S. Cl. 57—315 **10 Claims**



1. A method of production of yarns from sliver of textile fibres, in which first of all the textile fibre sliver is attenuated into roving and said roving is wrapped with a fine filament yarn, whereupon the wrapped roving is drawn in a drawing system having a predrawing zone and a main drawing zone and subsequently strengthened such as by imparting twist, characterized in that the filament yarns with which the roving is wrapped are ruptured not in the predrawing zone but in the main drawing zone.

4,484,436

PROCESS FOR PRODUCING A TWISTED YARN

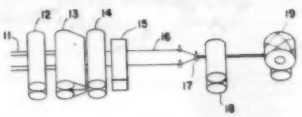
Takashi Nakayama; Seiichi Yamagata, both of Otsu, and Koji Kajita, Shiga, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 249,354, Mar. 31, 1981, Pat. No. 4,414,800. This application Jun. 27, 1983, Ser. No. 508,496

Claims priority, application Japan, Apr. 1, 1980, 55-42223; Oct. 31, 1980, 55-152332; Nov. 17, 1980, 55-160896

Int. Cl.³ D02G *3/28*

U.S. Cl. 57—328 **14 Claims**



1. A process for producing a twisted yarn comprising the steps of:

drafting a sheaf of staple fibers;

bundling said sheaf to form a bundled sheaf of staple fibers having substantially zero initial twist;

twisting at least two of said bundled sheaves upon each other, and maintaining the strength of the bundled sheaf in a manner to provide a coefficient of finishing twist utilization of more than 150%.

4,484,437

Patent Not Issued For This Number

4,484,438

HORSESHOE MANUFACTURE

Derek A. Griffiths, Stourbridge, England, assignor to Benjamin Baker (Lye) Limited, West Midlands, England

Filed Jan. 20, 1983, Ser. No. 459,459

Claims priority, application United Kingdom, Jan. 30, 1982, 8202698

Int. Cl.³ B21K *15/02*

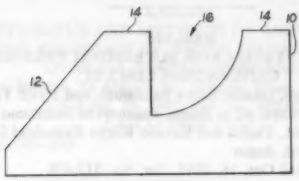
U.S. Cl. 59—61 **4 Claims**

1. A method of manufacturing a horseshoe with fullering, comprising the steps of

(a) rolling a length of metal stock to produce a profile in

which the edge that will be the outer edge of the horseshoe is inclined inwardly,

(b) forging the rolled stock to horseshoe shape, and



(c) performing a fullering operation in which the inclined outer edge of the horseshoe is deflected outwardly into a substantially vertical position.

4,484,439

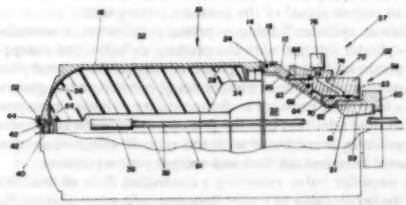
THRUST REVERSAL SYSTEM

Victor Singer; Donald V. Lushis, both of Newark, Del., and Thomas J. Kirschner, Jr., North East, Md., assignors to Thiokol Corporation, Chicago, Ill.

Filed Jul. 20, 1981, Ser. No. 285,224

Int. Cl.³ F02K *1/58*

U.S. Cl. 60—230 **33 Claims**



1. A thrust reversal system for a rocket motor having a wall defining a combustion chamber, a portion of said wall forming a conical rocket motor aft dome having a central nozzle formed therein,

a plurality of outlet ports formed in a circumferential band in the wall of the aft dome, each of said ports communicating exteriorly of the combustion chamber,

a piston cover mounted on the motor and normally held in a first position against the aft dome to seal said ports to permit normal operating combustion pressure within the combustion chamber, said cover being movable to a second position to uncover said ports,

stop means formed on the rocket motor to limit the extent of movement of said cover,

releasable means normally retaining said cover in said first position,

said cover, when released by said releasable means, being moved to said second position by pressure in said combustion chamber, and

means to regulate the rate of deployment of said cover from said first position to said second position.

4,484,440

EXHAUST MANIFOLD OF DUAL TYPE FORMED WITH CHAMBER TO RECEIVE EXHAUST GAS SENSOR

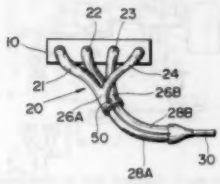
Yoshitaka Oki, and Takeshi Tanuma, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 8, 1982, Ser. No. 433,425

Claims priority, application Japan, Oct. 26, 1981, 56-159492[U]

Int. Cl.³ F01N *3/18*

U.S. Cl. 60—276 **2 Claims**



1. An exhaust manifold for a multicylinder internal combustion engine, comprising:

a manifold body formed with an opening for insertion of a sensitive part of an exhaust gas sensor into the manifold; and

a wall formed in the interior of the manifold body so as to serve as a partition between two separate exhaust gas passages which extend in the manifold body and are communicable with first and second groups of the engine cylinders, respectively,

said wall comprising a generally cup-shaped portion to receive therein the sensitive part of said sensor, said generally cup-shaped portion having an open end contiguous to said opening in the manifold body, a closed bottom at the opposite end and a generally cylindrical side wall extending from said open end to said closed bottom, and being formed with at least two relatively small apertures which provide fluid comunication between the space in said generally cup-shaped portion and said two exhaust gas passages, respectively, and said generally cup-shaped portion being integral with the remaining portion of said wall partitioning said two exhaust gas passages.

4,484,441

EXHAUST GAS PURIFICATION APPARATUS

Hideo Kobayashi, Kawagoe; Yohji Fukutomi, Sayama; Masahiko Asakura, Tokorozawa, and Eiji Kishida, Funabashi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1983, Ser. No. 510,242

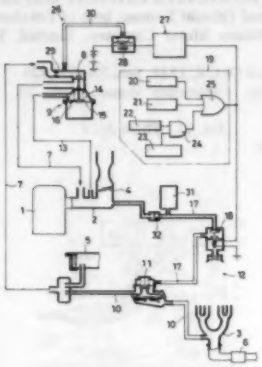
Claims priority, application Japan, Jul. 1, 1982, 57-112514

Int. Cl.³ F01N *3/22*

U.S. Cl. 60—285 **3 Claims**

1. In an exhaust gas purification apparatus for an internal combusion engine, the engine including an intake passage, a throttle valve in the intake passage, an exhaust passage, and a catalytic converter in the exhaust passage, the apparatus including means for injecting additional intake air into the intake passage downstream of the throttle valve upon a rapid increase of intake negative pressure therein, and means for introducing secondary air into the exhaust passage upon low load operation of the engine, the secondary air introducing means including an air introduction passage connected between atmosphere and the exhaust passage at a position upstream of the catalytic converter, and a control valve on the introduction passage; the improvement wherein the apparatus further comprises detect-

ing means for detecting the operation of the means for injecting and thereupon producing an operation signal, and control



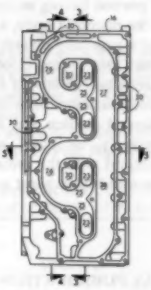
means for opening the control valve for a predetermined amount of time in response to said operation signal.

4,484,442

EXHAUST SYSTEM FOR FOUR CYLINDER TWO-CYCLE ENGINES

David J. Hale, Pickett, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jun. 8, 1983, Ser. No. 502,402
Int. Cl.³ F01N *7/08*; F02B *27/02*
U.S. Cl. 60—313 **11 Claims**



1. A two-cycle, in-line engine comprising:

(A) a cylinder block having:

(1) four horizontal cylinders arranged in a vertical bank,

(2) four vertically spaced exhaust ports in communication with said cylinders on a first side of said bank,

(3) an exhaust cavity formed generally in a plane parallel to the plane of said cylinder bank and open on said first side of said bank, said exhaust cavity including:

(a) a vertically extending exhaust trunk on one side of said exhaust ports,

(b) four exhaust legs, each connected to one of said exhaust ports, the upper two of said legs joining together and the lower two of said legs joining together on the side of said exhaust ports opposite said trunk,

(c) upper and lower exhaust branches, said upper branch connecting the junction of said upper two legs with said exhaust trunk and said lower branch connecting the junction of said lower two legs with said exhaust trunks, and

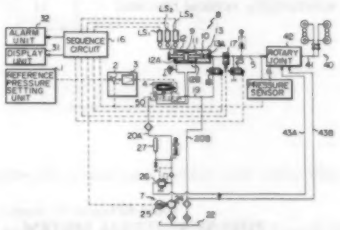
(B) an exhaust manifold cover attached to said cylinder block on said first side to form with said exhaust cavity an exhaust manifold.

4,484,443

CONTROL SYSTEM FOR SUPERHIGH PRESSURE GENERATION CIRCUIT

Toshiji Takigawa, Osaka; Akira Sakamoto, and Ryuji Takahashi, both of Tokyo, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka and Kayaba Kogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Oct. 16, 1981, Ser. No. 312,438
Claims priority, application Japan, Oct. 20, 1980, 55-146472
Int. Cl.³ B60T *17/22*
U.S. Cl. 60—534 **10 Claims**



1. A control system for a superhigh pressure generation circuit, comprising:

a pressure setting unit which produces an electric signal representing a preselected pressure;

an electrohydraulic servo valve for controlling an amount of fluid supply from a hydraulic fluid source in response to an output signal of the pressure setting unit;

a boost cylinder having a primary cylinder, a secondary cylinder integral with the primary cylinder and a stepped piston including a first piston portion and a second piston portion, said boost cylinder being constructed to generate a high fluid pressure in the secondary cylinder in response to fluid admitted into the primary cylinder from the servo valve in accordance with the ratio in effective sectional area between the first and second piston portions;

an amplifier valve receiving a controlled flow of fluid from the servo valve as a pilot flow and delivering a larger flow rate of fluid from the fluid source in proportion to the pilot flow, the primary cylinder of the boost cylinder being supplied with a controlled fluid flow from the amplifier valve;

a high pressure supply line into which the generated high pressure is introduced, a pressure sensor sensitive to the fluid pressure in said high pressure supply line, said pressure sensor being constructed to feed the sensed pressure back to the servo valve;

a high pressure relief valve disposed in a line which branches off the high pressure supply line into hydraulic connection with a reservoir, said high pressure relief valve being opened in response to an output signal of the sequence circuit when the fluid pressure in the high pressure supply line is elevated to an unusual level;

a shut-off valve disposed in said high pressure line,

a suction line for supplying a fluid supply to said secondary cylinder, a suction valve in said supply line, and

a sequence circuit which, when the piston in the boost cylinder reaches an end of a forward or inward stroke thereof, closes the shut-off valve disposed in the high pressure supply line and so switches the fluid pressure in the primary cylinder as to return the piston back to an initial position thereof, said sequence circuit also opening said

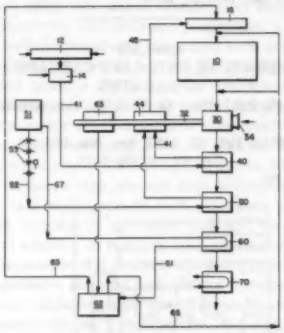
suction valve in said supply line after said shut-off valve is closed to admit fluid supply to said secondary cylinder as said piston returns back to said initial position.

4,484,444

APPARATUS AND METHODS OF AMPLIFYING ENGINE EMISSIONS BY WHICH TO INCREASE THE OVERALL ENGINE EFFICIENCY

Howard Bidwell, 56 Aldrich St., Granby, Mass. 01033

Filed Jul. 29, 1982, Ser. No. 402,970
Int. Cl.³ F02B *37/00*
U.S. Cl. 60—599 **2 Claims**



1. In combination with an internal combustion engine having intake and exhaust manifolds,
a turbo rotor connected to and driven by the exhaust gases from the exhaust manifold,
means for charging fresh air into the turbo rotor for mixing with the exhaust gases,
air intake means,
a carburetor for mixing air received from the air intake means with fuel delivered to the carburetor,
a first heat exchanger connected to exhaust gas from the turbo rotor for heating the air fuel mixture from the carburetor,
a water-alcohol reservoir,
a second heat exchanger connected to exhaust gas from the turbo rotor for heating the water-alcohol mixture from the water-alcohol reservoir,
an air-fuel-vapor supercharger driven by the turbo rotor and mixing the heated carbureted air-fuel mixture and the vapor of the heated water-alcohol mixture before delivery to the intake manifold.

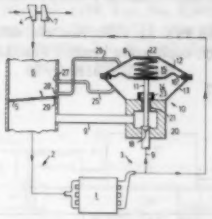
4,484,445

ARRANGEMENT FOR CONTROLLING EXHAUST GAS RECIRCULATION IN A SUPERCHARGED INTERNAL COMBUSTION ENGINE

Per S. Gillbrand, Enbörna, Sweden, assignor to Saab-Scania Aktiebolag, Sodertalje, Sweden

Filed Oct. 13, 1983, Ser. No. 541,660
Claims priority, application Sweden, Oct. 15, 1982, 8205854
Int. Cl.³ F02B *37/00*; F02M *25/06*
U.S. Cl. 60—605 **5 Claims**

1. Arrangement for controlling exhaust gas recirculation (EGR) in a supercharged internal combustion engine equipped with an intake system and an exhaust system and between said systems a conduit arranged for recirculating exhaust gases to an intake conduit in the engine intake system, the exhaust gas recirculation being controlled by a valve comprising a slidably mounted valve spindle which cooperates with a membrane in a control means in which the membrane separates an outer chamber and an inner chamber and is disposed to become axially displaced under the influence of the engine intake pressure and at least one spring or the like arranged in the control means, said outer chamber in the control means being connected via a conduit to the intake conduit immediately upstream of the idle position for a throttle valve pivotably mounted in the intake conduit, characterized in that the inner chamber is connected via a conduit to the intake conduit upstream of the connection of the conduit from the outer chamber but downstream of a compressor of the intake system whereby, at a certain overpressure in the inner chamber relative to the outer chamber, the force exerted by the spring on the membrane can be overcome and thus cause the valve spindle to open the conduit for recirculating exhaust gases.

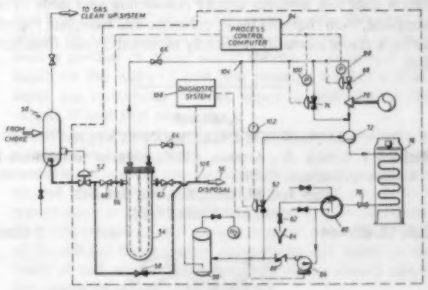


4,484,446

VARIABLE PRESSURE POWER CYCLE AND CONTROL SYSTEM

Fred L. Goldsberry, Spring, Tex., assignor to W. K. Technology, Inc., Houston, Tex.

Filed Feb. 28, 1983, Ser. No. 470,446
Int. Cl.³ F01K *25/10*
U.S. Cl. 60—647 **29 Claims**



5. A method of controlling a variable pressure supercritical Rankine power cycle utilizing a turbine, a condenser, a feed pump and a working fluid and including a heating phase comprising the steps of:
a. sensing the inlet temperature of a heat source liquid;
b. based on the heat source liquid inlet temperature and the working fluid and turbine utilized, selecting a superheated vapor point for the working fluid defining an isobaric pressure curve for the working fluid over the heating phase of the cycle, the isobaric pressure curve having a temperature substantially approaching the temperature of the heat source liquid at a point along the heating phase of the cycle;
c. setting the back pressure immediately upstream of the turbine inlet to the pressure selected for the superheated vapor point for the working fluid;
d. sensing the temperature of the working fluid at the superheated vapor point; and
e. regulating the flow rate of the working fluid through the heating phase of the cycle so that the temperature of the

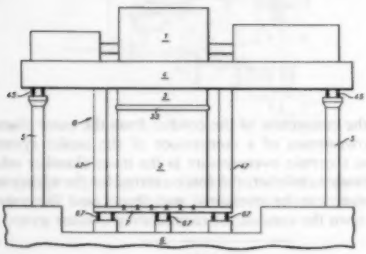
working fluid at the superheated vapor point is maintained.

4,484,447

TURBINE GENERATOR UNIT INSTALLATION

Roger Gueraud, Maisons Alfort, France, assignor to Electricite de France (Service National) French National Service, Paris, France

Filed Feb. 22, 1983, Ser. No. 468,649
Claims priority, application France, Feb. 23, 1982, 82 02929
Int. Cl.³ F01B *31/06*
U.S. Cl. 60—687 **1 Claim**



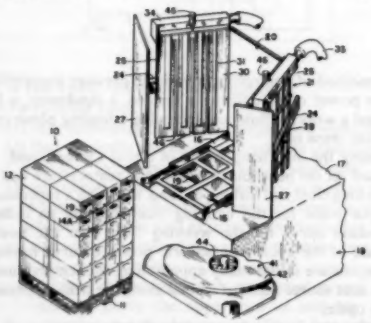
1. A turbine generator unit arrangement comprising a turbine and a condenser, a sleeve coupling said condenser to said turbine and including an airtight flexible joint, a table, said turbine being rigidly attached to said table, a foundation slab, first resilient means supporting said table on said foundation slab, said condenser being rigidly attached to a baseplate, second resilient means supporting said baseplate on said foundation slab, and columns rigidly connecting said table to said baseplate, such that said table, columns, and baseplate together define a cradle assembly resiliently mounted on said foundation slab.

4,484,448

LIQUID ICE INJECTION SYSTEM

Richard V. Crabb, Jr., Aromas, Calif., assignor to Growers Ice Company, Salinas, Calif.

Filed Jul. 25, 1983, Ser. No. 516,645
Int. Cl.³ F25D *17/02*
U.S. Cl. 62—64 **8 Claims**



1. A system for injecting a coolant into a plurality of produce cartons stacked together and having sides with openings therein, said system comprising:

a holding tank for containing the coolant and having a top opening,

a support for holding said carton stack in a position above said holding tank and over said top opening,

a frame of sufficient size to enclose one side of said carton stack and including a frame side wall facing the carton sides having inwardly facing ports therein aligning with said carton openings,

means to shift at least some of said frame side walls into contact with said carton stack together such that said side walls enclose said carton stack,

means to pump coolant from said holding tank into said ports and through said carton openings into the cartons to cool the produce therein, and

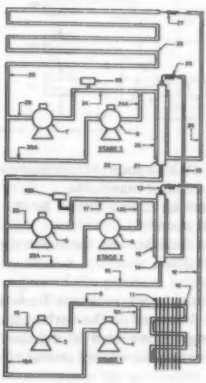
drain means for catching and guiding any overflow coolant back into said holding tank.

4,484,449

LOW TEMPERATURE FAIL-SAFE CASCADE COOLING APPARATUS

Ernest Muench, 2681 Bloor St. W-4, Toronto, Ontario, Canada M8X 1A4

Filed Feb. 15, 1983, Ser. No. 466,461
Int. Cl.³ F25B *7/00*
U.S. Cl. 62—79 **8 Claims**



7. Apparatus for maintaining a substantially safe low temperature level within an enclosed space, comprising a mechanical refrigerating three stage cascade cooling system including a first stage dual motor compressor arrangement with high pressure side and normally low pressure side connected in parallel and disposed in heat exchange relationship with cascade condenser heat exchanger of the second cooling stage, conduit means connecting in parallel said high and normally low pressure sides, two motor compressors disposed in said system continuously and alternately operated, a control device operatively associated with said two motor compressors and adapted to alternately energize one motor compressor and simultaneously de-energize the second motor compressor, an interval timing device operatively associated with said control device to perform the aforesaid function, a first circuit including both motor compressors and said control device, and a second circuit including said control and interval timing device, a second stage dual motor compressor arrangement with high pressure side and normally low pressure side connected in parallel and disposed in heat exchange relationship with cascade condenser heat-exchanger of the third cooling stage, conduit means connecting in parallel said high and normally low pressure sides, two motor compressors disposed in said system continuously and altermately operated, a control device operatively associated with said two motor compressors and adapted to alternately energize one motor compressor and simultaneously de-energize the second motor compressor, an interval timing device operatively associated with said control

device to perform the aforesaid function, a high pressure limit device, conduit means connecting said high pressure limit device to high pressure conduit side, operatively associated with said two motor compressors and adapted to energize said motor compressors on change in pressure in said conduit, a first conduit including both motor compressors and said control device, a second circuit including said control and interval timing device, a fourth circuit including high pressure limit device and said motor compressors, a third stage dual motor compressor arrangement with high pressure side and normally low pressure side connected in parallel and disposed in heat exchange relationship with evaporator of said enclosed space, conduit means connecting in parallel said high and normally low pressure sides, two motor compressors disposed in said system continuously and alternately operated, a temperature responsive switch operatively associated with said two motor compressors and adapted to regulate the temperature level of said enclosed space, a control device operatively associated with said two motor compressors and adapted to alternately energize one motor compressor and simultaneously de-energize the second motor compressor, an interval timing device operatively associated with said control device to perform the aforesaid function, a high pressure limit device, conduit means connecting said high pressure limit device to high pressure conduit side, operatively associated with said two motor compressors and adapted to energize said motor compressors on change in pressure in said conduit, a first circuit including both motor compressors and said temperature responsive switch, a second circuit including said temperature responsive switch and said control device, a third circuit including said control device and said interval timing device, and a fourth circuit including high pressure limit device and said motor compressors.

4,484,450

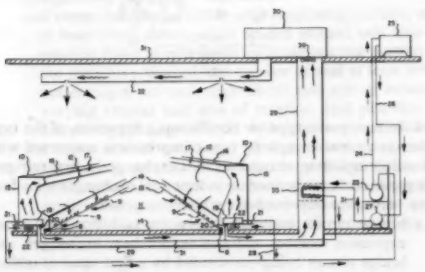
HIGH EFFICIENCY REFRIGERATION SYSTEM

Augustine J. Dolce, Tonawanda, N.Y., assignor to Niagara Frontier Services, Buffalo, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,766

Int. Cl.³ F25D *17/06*; A47F *3/04*

U.S. Cl. 62—89 **12 Claims**



1. The method of increasing the efficiency of a refrigeration system for a refrigerated display case having an evaporator associated therewith, the system also having means for conveying refrigerant to the evaporator, which comprises the steps of

(a) recovering cooled spillover air from a refrigerated display case of the type permitting cooled air from within the case to spillover therefrom into the ambient space adjacent the case before substantial mixing with ambient air has occurred; and

(b) conveying the recovered spillover air in heat exchange relation to the means for conveying refrigerant to the evaporator.

4,484,451

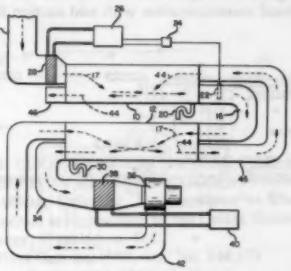
TWO-STAGE GAS CONDENSER WITH FEEDBACK COOLING

William J. Darm, Tigard, Oreg., assignor to United Air Specialists, Inc., Cincinnati, Ohio

Continuation of Ser. No. 939,334, Sep. 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 567,258, Apr. 11, 1975, Pat. No. 4,140,175, which is a continuation-in-part of Ser. No. 468,659, May 10, 1974, Pat. No. 3,905,805, and a continuation-in-part of Ser. No. 473,512, May 28, 1974, Pat. No. 3,982,588. This application Jun. 9, 1980, Ser. No. 157,932

Int. Cl.³ F28B *7/00*

U.S. Cl. 62—90 **5 Claims**



1. A method for treating gas to remove water vapor and solvent vapor having different condensation temperatures, comprising the steps of:

transmitting an input gas containing water vapor and organic solvent vapor through first passages in a first heat exchanger;

transmitting a cooling gas through cooling passages in said first heat exchanger to cool said input gas to a temperature below the condensation temperature of water to cause at least a portion of water vapor therein to condense as a liquid on the walls of said first passages so that a dried input gas containing solvent vapor is provided at the output of said first passages;

transmitting said dried input gas through second passages in a second heat exchanger;

transmitting a cooling gas through cooling passages in said second heat exchanger to cool said dried input gas to a temperature in said second passages below the condensation temperature of said solvent to cause a portion at least of the solvent vapor therein to condense as a liquid on the walls of said second passages to provide a treated gas at the output of said second passages;

removing the condensed solvent from said second heat exchanger;

cooling said treated gas to a temperature below the condensation temperature of the input gas component condensed in said second heat exchanger to form said cooling gas; and

feeding back said cooling gas through said cooling passages of said second heat exchanger and said first heat exchanger in the order named.

4,484,452

HEAT PUMP REFRIGERANT CHARGE CONTROL SYSTEM

Marion E. Houser, Jr., Tyler, Tex., assignor to The Trane Company, La Crosse, Wis.

Filed Jun. 23, 1983, Ser. No. 506,965

Int. Cl.³ F25B *41/00, 13/00*

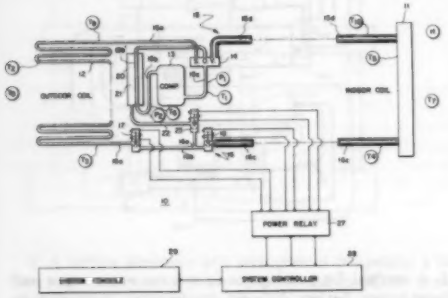
U.S. Cl. 62—174 **15 Claims**

1. An improved refrigerant charge control system for a heat pump used to temperature condition an indoor zone under

variable load conditions, said heat pump having a refrigerant circuit including indoor and outdoor heat exchange coils, a refrigerant compressor, and a switchover valve adapted to reverse the flow of refrigerant through the refrigerant circuit so that the heat pump may be selectively operated in either a heating mode or a cooling mode; the circuit further including a first refrigerant flow line interconnecting one end of each of the heat exchange coils via the compressor and the switchover valve, the first flow line having suction and discharge line sections, and a second refrigerant flow line directly interconnecting the other ends of the heat exchange coils, the improvement comprising:

first and second controllable expansion valves in the second refrigerant flow line;

a refrigerant charge receiver, the interior of which is in thermal communication with said suction line section;



a third refrigerant flow line including a controllable charge control valve connecting said charge receiver to the second refrigerant line at a point intermediate said first and second controllable expansion valves;

means for sensing refrigerant temperature and pressure at predetermined points in the refrigerant circuit;

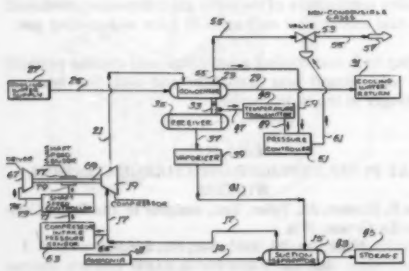
and control means responsive to said sensed temperatures and pressures for controlling operation of said valves to provide bidirectonal flow of refrigerant into and out of the refrigerant circuit at said intermediate point to adjust the amount of refrigerant charge in the refrigerant circuit for efficient operation of the system in each of the heating and cooling modes, as the temperature conditioning load on the heat pump changes.

4,484,453

AMMONIA PLANT REFRIGERATION SYSTEM AND PROCESS CONTROL METHOD THEREFOR

Joseph Niess, Donaldsonville, La., assignor to CF Industries, Inc., Long Grove, Ill.

Filed Oct. 8, 1982, Ser. No. 433,543
Int. Cl.³ F25B *43/04*
U.S. Cl. 62—195 **6 Claims**



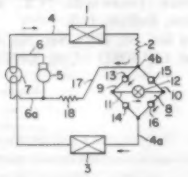
1. In a refrigeration system having a controller and a condenser, said condenser having a valve controllable to open at different pressures, said system including means for controlling a preselected concentration of non-condensible gases, said condenser receiving predetermined rates of said non-condensible gases and a condensible gas in a predetermined ratio in relation to said non-condensible gases, said valve being usable selectively to purge at least a portion of said non-condensible gases from said system, said condenser including means for condensing at least a portion of said condensible gas and thereby forming condensate within said condenser, pressure within said condenser being controllable by said valve, a method for maintaining said preselected concentration of said non-condensible gases in said condenser comprising: (1) sensing the temperature of said condensate to determine a sensed temperature value; (2) converting said sensed temperature value into a first signal receivable by said controller and convertible by said controller into a second signal, said controller including means for using said second signal to cause said valve to function in a predetermined manner to open at a controlled pressure to cause said actual pressure in said condenser to change to a new actual pressure corresponding to a precalculated pressure value corresponding to said sensed temperature for maintaining said preselected concentration of said non-condensible gases in said condenser; and (3) comparing said new actual pressure to said precalculated pressure value and adjusting said valve until the differential between said new actual pressure and said precalculated pressure value is no more than a preselected differential.

4,484,454

AIR CONDITIONING APPARATUS

Akihiko Sugiyama, Fuji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 23, 1984, Ser. No. 573,200
Claims priority, application Japan, Jan. 25, 1983, 58-10324
Int. Cl.³ F25B *41/04*
U.S. Cl. 62—222 **6 Claims**



1. In heat pump type air conditioning apparatus of the type wherein a variable capacity type compressor is connected with a conduit including an outdoor heat exchanger, a first refrigerant expansion member and an indoor heat exchanger via a four way valve, the improvement which comprises:

a bridge circuit connected between said first refrigerant expansion member and said indoor heat exchanger, said bridge circuit being constituted by a first conduit including a first check valve permitting a flow of the refrigerant at the time of cooling and a second refrigerant expansion member;

a second conduit connected in parallel with said first conduit and including a second check valve permitting a flow of the refrigerant at the time of heating and a third refrigerant expansion member, and a bypass conduit including a controlled valve and connected between a junction between said first check valve and said second refrigerant expansion member of said first conduit, and another junction between said second check valve and said third refrigerant expansion member of said second conduit;

a cooling conduit for said compressor, said cooling conduit being connected to said another junction; and

means for controlling said controlled valve in accordance

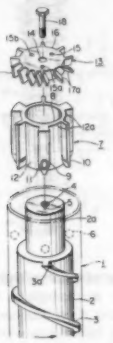
with a temperature of said refrigerant discharged from said compressor.

4,484,455

CUTTER FOR AN AUGER TYPE ICEMAKER

Junichi Hida, Chiryu, Japan, assignor to Hoshizaki Electric Co., Ltd., Aichi, Japan

Filed Jan. 14, 1983, Ser. No. 458,050
Int. Cl.³ F25C *5/12*
U.S. Cl. 62—320 **19 Claims**



1. An auger type icemaker comprising:
a refrigerated casing;
a vertically extending auger shaft with an auger edge, rotatably supported for rotation about a vertical axis of rotation within said refrigerated casing to scrape and guide upward ice formed on the inner surface of said refrigerated casing;
an extrusion head fitted to the upper portion of said auger shaft and provided with ice compressing passages for receiving the ice from said auger edge; and
a cutter attached to said upper end of said auger shaft over said extrusion head so as to rotate in a horizontal plane about said axis of rotation for breaking the ice from the ice compressing passages;
said cutter including a cutter edge supporting portion, and at least three cutter edges spaced around said axis of rotation fixed to said cutter edge supporting portion at the periphery thereof, the number of said at least three cutter edges per unit angle about said axis of rotation varying around said axis of rotation, said plurality of cutter edges being inclined with respect to said plane;
the upper end of said auger shaft and said cutter edge supporting portion including cooperating means for positioning said cutter at any of a plurality of angular positions with respect to said axis of rotation so as to adjustably position said plurality of cutter edges in relation to said auger edge.

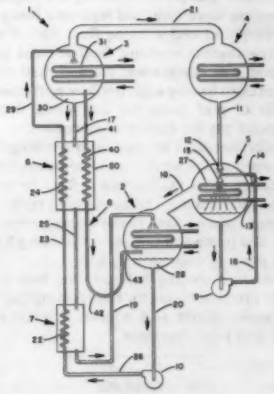
10. An auger type icemaker comprising:
a refrigerated casing;
a vertically extending auger shaft with an auger edge, rotatably supported within said refrigerated casing to scrape and guide upward ice formed on the inner surface of said refrigerated casing;
an extrusion head fitted to the upper portion of said auger shaft and provided with ice compressing passages for receiving the ice from said auger edge; and
a cutter attached to said upper end of said auger shaft over said extrusion head so as to rotate in a horizontal plane about said axis of rotation for breaking the ice from the ice compressing passages;
said cutter including a cutter edge supporting portion, and a plurality of cutter edges spaced around said axis of rotation fixed to said cutter edge supporting portion at the periphery thereof, said plurality of cutter edges being inclined with respect to said plane;
the upper end of said auger shaft and said cutter edge supporting portion including cooperating means for positioning said cutter at any of a plurality of angular positions with respect to said axis of rotation so as to adjustably position said plurality of cutter edges in relation to said auger edge, said positioning means including at least one hole formed in one of said upper end of said auger shaft and said cutter edge supporting portion, and an elongated member fittable in said at least one hole, located on the other of said upper end of said auger shaft and said cutter edge supporting portion.

4,484,456

TRIPLE LOOP HEAT EXCHANGER FOR AN ABSORPTION REFRIGERATION SYSTEM

Robert C. Reimann, Lafayette, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 21, 1983, Ser. No. 544,173
Int. Cl.³ F25B *15/00*
U.S. Cl. 62—476 **3 Claims**

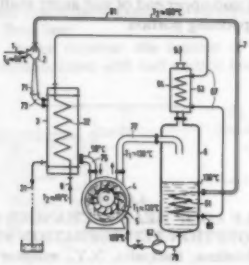


1. A triple loop heat exchanger for an absorption refrigeration system having a generator, an absorber, a solution heat exchanger, and a bypass system, said triple loop heat exchanger comprising:
means for conducting weak solution from the solution heat exchanger to the generator;
a strong solution line for conducting strong solution from the generator to the solution heat exchanger, at least a portion of said strong solution line in heat exchange relationship with the means for conducting weak solution from the solution heat exchanger to the generator; and
a bypass system for conducting strong solution from the generator around the strong solution line and around the solution heat exchanger to the absorber when strong solution builds up in the generator above a selected level, at least a portion of said bypass system in heat exchange relationship with the strong solution line for conducting strong solution from the generator to the solution heat exchanger.

4,484,457
LIQUID-RING VACUUM PUMP PRECEDED BY A PRECOMPRESSOR

Kurt Mugele, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 27, 1983, Ser. No. 461,505
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1982, 3204784
Int. Cl.³ F25B *1/06*
U.S. Cl. 62—500 **7 Claims**



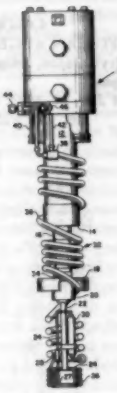
1. A vacuum generating system comprising:
a liquid ring vacuum pump having a gas inlet, a gas mixture outlet and a working fluid inlet;
a liquid separator connected at an input to said gas mixture outlet of said pump for receiving a compressed gas and fluid mixture therefrom, said separator being connected at a fluid output of said working fluid inlet of said pump for delivering thereto working fluid at least partially separated from said compressed gas and fluid mixture;
a precompressor having a gas outflow port connected to said gas inlet of said pump for delivering thereto partially compressed gas for further compression;
heat transfer means, in contact with working fluid circulating between said separator and said pump, for transferring heat energy from said working fluid to a coolant, said working fluid having a higher boiling point than the boiling point of said coolant, the operating temperature of said fluid in said pump and said separator being higher than the boiling point of said coolant; and
conduit means extending between said heat transfer means and said precompressor for transporting thereto from said heat transfer means said coolant in vaporized form for driving said precompressor.

4,484,458
APPARATUS FOR CONDENSING LIQUID CRYOGEN BOIL-OFF

Ralph C. Longsworth, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 9, 1983, Ser. No. 550,323
Int. Cl.³ F25B *19/00*
U.S. Cl. 62—514 JT **8 Claims**

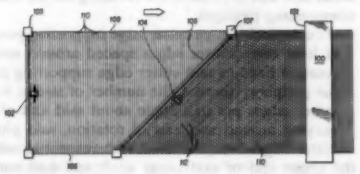
1. An apparatus for condensing liquid cryogen boil-off in a confined space comprising in combination:
a multi-stage displacer-expander refrigerator with each stage of said refrigerator containing a heat station, said refrigerator having a coldest stage capable of being cooled to between 15° and 20° K.;
a helium recondenser disposed axially and spaced apart from the coldest stage of said refrigerator;
a Joule-Thompson heat exchanger coiled around said refrigerator and in thermal contact with each of said heat stations, said heat exchanger constructed and arranged to conduct high pressure helium to a Joule-Thompson valve disposed upstream of said helium recondenser and return low pressure helium, said Joule-Thompson heat exchanger adapted to approximately match thermal gradients in said refrigerator and in the stratified helium between the coldest stage of said refrigerator and said helium condenser.



4,484,459
BIASED MULTI-LAYER STRUCTURAL FABRIC COMPOSITES STITCHED IN A VERTICAL DIRECTION AND PROCESS AND APPARATUS FOR MAKING SAME

Harold K. Hutson, Seguin, Tex., assignor to Knytex Proform, Seguin, Tex.

Filed Sep. 28, 1983, Ser. No. 536,734
Int. Cl.³ D04B *23/06*
U.S. Cl. 66—84 A **5 Claims**

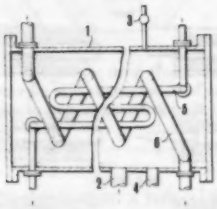


1. A method for making a multi-layer non-woven structural fabric, comprising:
advancing at least two layers of substantially parallel structural fibers into a stitching machine, each said layer being free of any secondary yarns in the plane of the layer for maintaining said parallelity, at least one of said layers being biased at an acute angle of 15, 30, 45 or 60°, wherein all said structural fibers of each layer are oriented at substantially the same angle; and
stitching said layers together by passing a stitching fiber therethrough in a direction normal thereto, said stitching being sufficient to maintain said vertical relationship of said layers and parallelity of fibers within each layer,
wherein each of said layers if formed by a weft lay down carriage aligned with said stitching machine and said other weft lay down carriages, said weft lay down carriage forming said at least one biased layer being oriented at said angle of 15, 30, 45 or 60° with respect to said stitching machine.

4,484,460
APPARATUS FOR WET-HEAT TREATING A CLOTH CONTINUOUSLY

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

Filed Jul. 14, 1983, Ser. No. 514,142
Claims priority, application Japan, Jul. 16, 1982, 57-123817; Jul. 16, 1982, 57-123818
Int. Cl.³ D06B *3/12, 23/00*
U.S. Cl. 68—5 E **4 Claims**

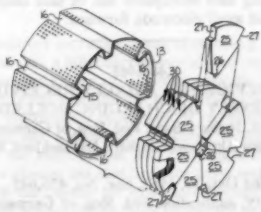


1. An apparatus for wet-heat treating a cloth continuously, comprising a high temperature liquid generating chamber maintained at a constant high temperature and pressure by supplying high temperature and pressure steam therein and provided with at least one of a treating solution heating pipe and a water heating pipe, and a wet-heat chamber provided with a plurality of guide rollers for transporting a cloth to be treated zigzag forming snaky undulations through the chamber and a plurality of nozzle pairs respectively arranged adjacent to both sides of the cloth and communicating to said treating solution heating pipe and/or the water heating pipe.

4,484,461
DYE MACHINE WITH CAPACITY DECREASING INSERT

Gary P. Parks, and Jack H. Wade, both of Morganton, N.C., assignors to Hosiery Manufacturing Corp. of Morganton, Morganton, N.C.

Filed Nov. 21, 1983, Ser. No. 554,000
Int. Cl.³ D06F *5/26*
U.S. Cl. 68—142 **5 Claims**

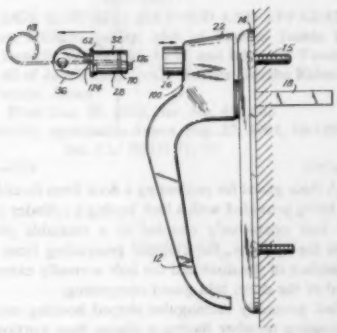


1. In a machine for treating textile articles with liquid, such as dye, and including a housing, a rotatable cylinder supported for rotation about a substantially horizontal axis in said housing and having space therein for confining textile articles for treatment by the liquid, said cylinder including a closed inner wall and an open outer end, and an access door supported on said housing and communicating with said open outer end of said cylinder for placing textile articles into and removing the same from said cylinder, the combination therewith of capacity decreasing insert means for reducing the volume of the space within said rotatable cylinders so that a reduced quantity of textile articles may be treated with a correspondingly reduced amount of liquid in said machine, said capacity-decreasing insert means comprising a plurality of segments which may be individually inserted into said cylinder and arranged to form at least one annular space-occupying element against said closed inner wall of said cylinder, said segments being adapted to be positioned in said cylinder and removed therefrom through said access door so as to selectively vary the capacity of said cylinder.

4,484,462
REMOVABLE CYLINDER LOCK

Irving L. Berkowitz, Binghamton, N.Y., assignor to Kason Industries, Inc., Binghamton, N.Y.

Filed May 3, 1982, Ser. No. 374,579
Int. Cl.³ E05B *29/02*
U.S. Cl. 70—368 **3 Claims**



1. A lock assembly movably positionable within a housing and comprising an outer body portion and an inner plug portion substantially concentrically, rotatably disposed within said outer body portion, said plug having a number of tumblers and a keyway for receiving a key for rotatably actuating said tumblers, said plug being removably from said outer body portion only when said outer body portion is disengaged from said housing, said cylinder further comprising:

means defining a groove in said body portion;

a retainer supported by said plug, said retainer actuable for movement into and out of engagement with said groove, said retainer being spring biased into engagement with said groove when said body portion is engaged in said housing;

a flat spring supported by said plug for biasing said retainer into engagement with said groove;

at least one compression spring disposed between said outer body portions and said housing for biasing said outer body portion towards disengagement with said housing;

a slidable pin disposed in said body portion for slidable movement into and out of locking engagement with said housing, said pin normally locking said body portion into engagement with said housing when plug has not been rotatably actuated by said key;

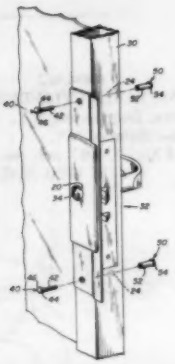
a lug disposed upon said plug for bearing engagement with said pin, said lug causing said pin to move but of normal locking engagement with said housing, when said plug has been rotatably actuated by said key; and

means defining a channel disposed between said plug and said body portion, said channel extending to said groove and adapted to receive a tool, for disengaging said retainer from said groove, whereby said plug can be movably freed from said body portion.

4,484,463
DOOR LOCK GUARD

Thomas F. Hennessy, Bristol, Conn., assignor to Lori Corporation, Southington, Conn.

Filed Sep. 27, 1982, Ser. No. 423,827
Int. Cl.[3] E05B 15/02
U.S. Cl. 70—452 4 Claims



1. A door guard for protecting a door from forced entry, the door being provided with a lock having a cylinder and a reciprocal bolt operatively coupled to a rotatable plug housed within the cylinder, the cylinder protruding from a first flat side surface of the door and the bolt normally extending from an end of the door, said guard comprising:

a first generally rectangular shaped housing member, said housing member having a planar base portion and four side walls extending outwardly therefrom, said base portion and side walls defining a recess, said base portion being provided with an aperture;

a pair of flat sided coplanar generally rectangular shaped mounting members, said mounting members being integral with and extending in opposite directions from the ends of first and second oppositely disposed of said side walls of said housing member, said mounting members being oriented parallelly with respect to the plane of said housing member base portion and being each provided with a mounting hole whereby said guard may be affixed to the said first side surface of a door with the first side of each of said mounting members abutting said door first side surface and the door lock cylinder located within said recess in registration with said aperture;

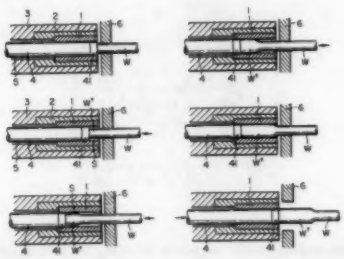
a bolt guard, said bolt guard being integral with said housing member and said mounting members, said bolt guard having a first portion which defines a plane parallel to the planes of said housing member base portion and said mounting members, the plane defined by said bolt guard first portion being disposed intermediate the planes of said housing member base portion and mounting members, said bolt guard being coextensive in length with said housing member and mounting members, said bolt guard further having a pair of side walls which extend between said first portion thereof and said mounting members, at least a third of said housing member side walls terminating at said bolt guard first portion in a region disposed between said bolt guard side walls, said bolt guard extending outwardly from an edge of the door to shield the bolt when in its normally extended condition; and

means for mounting said door guard to the door, said mounting means extending through said mounting holes in said mounting members and passing through the door.

4,484,464
ELECTRICAL UPSETTING METHOD AND DEVICE THEREFOR

Tetsuo Nihei, Ooimachi; Toshio Maki, Kamifukuoka, and Kazuyoshi Sakuma, Hidakamachi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Toyko, Japan

Filed Nov. 18, 1981, Ser. No. 322,403
Claims priority, application Japan, Nov. 21, 1980, 55-164984; Nov. 21, 1980, 55-167892[U]
Int. Cl.[3] B21D 22/00, 31/00; B21J 5/08
U.S. Cl. 72—38 3 Claims



1. A method for electrical upsetting of a workpiece of cylindrical metal material having an end face, which comprises steps of:

(a) causing an anvil electrode with a forward face and said end face of said workpiece to contact each other in a hollow, open-ended shaping die with an inner surface, an entrance opening and a bottom part a bottom wall of which is defined by said anvil electrode forward face;

(b) conducting electric current across electrodes to generate heat at the end part of said workpiece adjacent said anvil electrode forward face to soften the end portion of said workpiece;

(c) withdrawing and stopping said anvil electrode toward the bottom part of said shaping die, keeping in contact said anvil electrode and the end face of the workpiece while maintaining a space between the said workpiece and the inner surface of said shaping die, subsequently, pushing said workpiece to the anvil electrode under vigorous pressure, to upset said end part within said shaping die; and

(d) discharging said workpiece out of said shaping die by moving said anvil electrode forward.

4,484,465
BRAKING DEVICE FOR AXIALLY RECEIVING AND TRANSVERSELY DISCHARGING ROLLED BARS

Otto K. Buchheit, Ingbert/Saar, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Oct. 21, 1982, Ser. No. 435,647
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1981, 3142698
Int. Cl.[3] B21B 39/20; B21D 45/04
U.S. Cl. 72—250 5 Claims

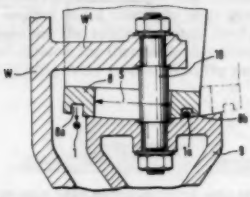
1. A braking device for axially receiving and transversely discharging rolled bars discharged from a mill train at a high rate of speed comprising:

a common channel section defining at least two adjacent downwardly opening feed channels for lateral guidance of the bars;

a common sliding section cooperating with said channel section to form bottom surfaces for closing said feed channels and preventing said bars from dropping out of said feed channels; and

means for swingingably moving said channel section and said sliding section relative to one another between a

middle position in which both said feed channels are closed, and two laterally opposite positions in which said feed channels are opened, respectively, such that one bar



at a time is allowed to drop from one feed channel at a time by moving said channel section and said sliding section relative to one another from one of said lateral positions to the other.

4,484,466

DEVICE FOR REMOVING A DIE, A DISCARD AND A CLOSING PLATE FROM AN INDIRECT METAL EXTRUSION PRESS

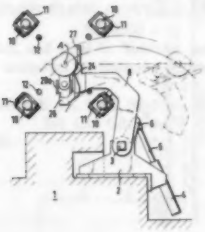
Horst Groos, Metzkausen, and Gunther Wintzen, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jan. 18, 1983, Ser. No. 458,834

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1982, 3202051

Int. Cl.³ B21C *35/04*

U.S. Cl. 72—255 **7 Claims**



1. In an indirect extrusion press comprising a press frame having a press axis, a billet carrier movable along the press axis and having opposite open ends, a stationary die support facing one open end of the billet carrier and carrying an extrusion die in operation disposed for movement of the billet carrier along and over said die, a movable crosshead facing the opposite open end of the billet carrier and carrying a closing plate in operation for closing the said opposite open end when a billet is disposed in the carrier for extrusion through the extrusion die, a movable holder for the billet carrier for moving the billet carrier over the extrusion die, and a shearing device mounted on the said holder and operating in a direction transverse to the press axis for separating the extruded billet material from residual discard material comprising a butt end portion of the billet and from the extrusion die and closing plate adjoining the said discard after extrusion, the improvement comprising: a pivotable removal arm having a free end which by pivoting of the arm is movable to and away from the axis of the press, the arm being mounted for movement parallel to the said press axis; a two-part holding sleeve carried at the free end of the pivotable arm and thereby disposable adjacent to the said opposite open end of the billet carrier, the holding sleeve being at least partly closed at an end thereof remote from the billet carrier and being adapted to press against the billet carrier under pressure exerted by the press thereby to expel the closing plate, the butt end discard and the extrusion die from the billet carrier into the holding sleeve; means for effecting axial relative movement of the two parts of the holding sleeve whereby a first said part serving to hold the closing plate and said discard can, after said expulsion be axially separated from the other said part which serves to hold the die; at least two gripping segments which project into the said other part, are positively located axially and are radially movable for gripping said die; and means for receiving the separated closing plate and discard, comprising a clamping seat, means for moving the clamping seat to a first position between the said parts on axial separation of said parts and to a second position radially offset from the said parts, the direction of movement of the clamping seat being generally aligned with that of the shearing device, and gripping means associated with the clamping seat for gripping the closing plate and discard separated by the shearing device from the extruded material and the die.

4,484,467

BEADED EDGE FORMING METHOD AND APPARATUS

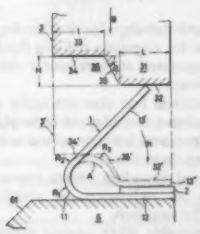
Mikio Kitano; Hideaki Tobita, both of Toyota; Toshio Uno, Okazaki; Kyoichi Yamaguchi, Aichi, and Ichiyoshi Tsuchiya, Okazaki, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 29, 1982, Ser. No. 454,363

Claims priority, application Japan, Sep. 22, 1981, 56-149831

Int. Cl.³ B21D *19/10*

U.S. Cl. 72—379 **6 Claims**



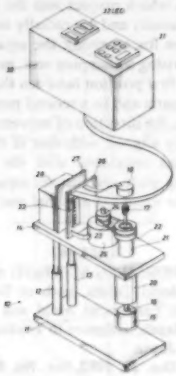
1. A method of forming a beaded edge on a plate member, the method comprising in sequence a preforming step and a hemming step, wherein the preforming step comprises placing a plate member on a lower die surface, the plate member having an upstanding outer edge portion bent to approximately a right angle with respect to the plate member, the bend region having a predetermined radius of curvature greater than the thickness of the plate member; applying a first uniform force along the free edge of the upstanding outer edge portion, the first uniform force being directed toward the plate member at approximately a 45° angle and at a strength sufficient to turn the outer edge portion while leaving the bend region unconfined; and terminating said force when the outer edge portion forms an angle of approximately 45° with the plate member while retaining said radius of curvature at the bend region; and the hemming step comprises applying a second uniform force along the free edge of the outer edge portion, said second force being directed toward the plate member at approximately a 90° angle and at a strength sufficient to press the free edge of said outer edge portion toward the plate member, and further applying a force parallel to said second force to a part of the outer edge portion lying outside the boundary of a circle congruent with a convex surface of the plate member in the bend region and having a radius equal to said predetermined radius of curvature to fold said part of the outer edge portion parallel to the plate member while retaining said curvature at the bend region to provide a beaded edge to said plate member.

4,484,468

AUTOMATIC VISCOMETER

Gerald S. Gau, and Vladimir Vayashteyn, both of Houston, Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Aug. 27, 1982, Ser. No. 412,341
Int. Cl.³ G01N *11/14*
U.S. Cl. 73—60 **17 Claims**



1. An automatic programmable viscometer comprising:
(a) a base for supporting a container with drilling fluid therein;
(b) a rotatable tubular sleeve extending into the container on said base for engaging drilling fluid therein;
(c) pulse operated stepper motor drive means for rotating said sleeve;
(d) a cylindrical bob concentrically positioned within said tubular sleeve and adapted to be placed in drilling fluid in a container, said bob connected with a rotatable bob shaft extending thereabove;
(e) rotational encoding means connected to said shaft for forming an indication of rotation thereof conveyed thereto by said bob;
(f) programmable drive control means connected with said pulse operated stepper motor drive means for controlling rotation of said tubular sleeve in a specified sequence to carry out a test program of drilling fluid wherein measurements from said encoding means are recorded dynamically during the test program;
(g) input means responsive to externally generated signals for inputting commands to said drive control means; and
(h) output means for indicating fluid measurements related to the viscosity of the drilling fluid in the container.

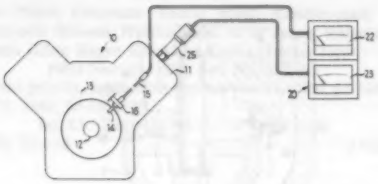
4,484,469

LUMINOSITY PROBE WITH POSITIVELY RETAINED LIGHT PIPE

Donald D. Grover, Kenosha, Wis., and Ralph H. Mueller, Auburn, N.Y., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Filed May 9, 1983, Ser. No. 492,628
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—119 A **7 Claims**

1. A luminosity probe for diesel-engine timing apparatus comprising an elongated tubular member adapted to be mounted in the opening of a selected engine cylinder and having a tip projecting into the combustion zone thereof to be subjected to light occurring therein, said tubular member having a portion projecting outside the cylinder, said tubular member having a bore therein, a light pipe in the bore having an outside diameter less than the inside diameter of the bore so as to create an annulus therebetween, said light pipe having a retaining portion of diameter different than substantially the rest of said light pipe, binder means in said annulus, a coupler telescopically engaging said projecting portion, and a photodetector within said coupler in effective relation with the adjacent end of said light pipe for converting light passing through said light pipe into electrical signals.

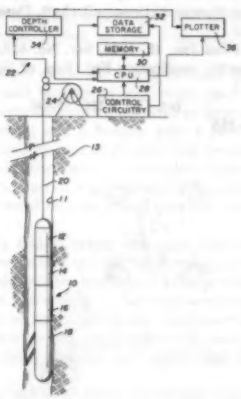


4,484,470

METHOD AND APPARATUS FOR DETERMINING CHARACTERISTICS OF CLAY-BEARING FORMATIONS

Walter H. Fertl, and Naum Ruhovets, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 416,826, Sep. 13, 1982,. This application Jan. 5, 1983, Ser. No. 455,772
Int. Cl.³ E21B *49/00*
U.S. Cl. 73—152 **20 Claims**



1. A method of determining characteristics of earth formations, comprising the steps of:
determining the volume of clay contained in said earth formations;
determining a first property of said formations functionally related to said volume of clay; and
determining a second property of said formations in response to said first property, said second property indicating potential clay swelling.

4,484,471

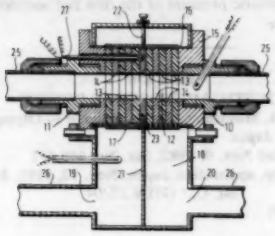
FLOW METERS

Joshua Swithenbank, Barnfield House, Barnfields, and David S. Taylor, 54 Kingfield Rd., both of Sheffield, England

Filed Sep. 17, 1982, Ser. No. 419,532
Claims priority, application United Kingdom, Sep. 26, 1981, 8129137
Int. Cl.³ G01F *1/68*; G01K *17/00*
U.S. Cl. 73—204 **15 Claims**

1. A meter for measuring the rate of flow of a fluid comprising an inlet and outlet for said fluid; a first surface intermediate of said inlet and outlet over which the fluid will flow in passing

from inlet to outlet; a thermal bridge connecting said first surface to a second surface; said second surface maintained at a different temperature to the first surface by means of a secondary fluid flow; said thermal bridge comprising a relatively good thermally conductive portion connected thermally to said first surface and a relatively poor thermally conductive portion between the relatively good conductive portion and the second surface; the thermal bridge being insulated so that heat flow is effectively restricted to the path defined thereby



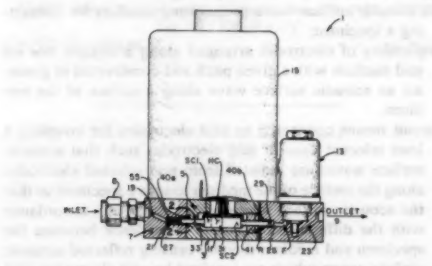
between the first and second surfaces; a temperature measuring device arranged to be responsive to the temperature at an intermediate point in the relatively conductive portion of the bridge; temperature measuring devices arranged to measure the temperature of the fluid over the first surface and the temperature of the second surface respectively; and means being provided in association with said second surface to maintain that surface at substantially the same temperature as the secondary fluid flow.

4,484,472

CONCENTRIC ROD AND TUBE SENSOR FOR THERMAL MASS FLOW CONTROLLER AND FLOW METER

Edward J. Licinit, and Paul G. Sullivan, both of Montgomery County, Pa., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 16, 1983, Ser. No. 467,180
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—204 **12 Claims**



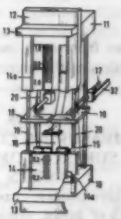
1. In a thermal mass flow meter for measuring the flow of fluid therethrough, said flow meter comprising a meter body having a flow path therethrough, the latter having an inlet and an outlet, means for heating said fluid flowing through said flow passage, means for sensing the temperature rise of said fluid flowing through said flow passage heated by said heating means, and means responsive to said temperature rise of said fluid for generating a signal proportional to the mass flow rate of said fluid flowing through said flow passage, wherein the improvement comprises: an inlet bushing within said flow path having at least one opening therethrough, an outlet busing within said flow path having at least one opening therethrough, a tube extending between said bushings, a rod disposed concentrically within said tube, means in said inlet and outlet bushings for positively holding said rod centered within said tube thereby to establish and to maintain a concentric annular opening between the outer surface of said rod and the inner surface of said tube, said annular opening constituting a portion of said flow path.

4,484,473

MONITORING AND SIGNALLING TAPE HEAD APPARATUS

Walter Metz, Moosbrunn, Fed. Rep. of Germany, assignor to Metz-Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 283,383, Jul. 15, 1981, abandoned. This application Dec. 27, 1983, Ser. No. 565,518
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1980, 3026677
Int. Cl.³ G01D *11/30*; G01R *11/25*; G08B *1/08*
U.S. Cl. 73—432 AD **33 Claims**



1. Monitoring and signaling device having at least one tape for indicating a measurement value of a measuring unit and for actuating a signal transmitter, the tape having a section thereof stretched over spatially separated guides and having a travel proportional to the measurement value and a coating effecting actuation of the signal transmitter, said signal transmitter being selectively displaceable parallel to the section of the tape extending between the guides, comprising an indicator for indicating a set nominal-value signaling point, said indicator and the signal transmitter being integrated in a signal head, and two bars extending parallel to the section of the tape and carrying adjustably said signal head, the section of the tape being displaceable past the signal transmitter in direct vicinity thereof and between the signal transmitter and said indicator.

4,484,474

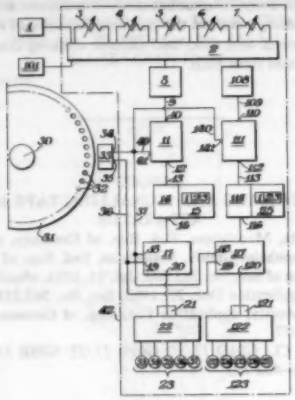
UNBALANCE MEASUREMENT DEVICE FOR DETERMINATION OF UNBALANCE ACCORDING TO POSITION AND MAGNITUDE

Otfrid Maus, Darmstadt, Fed. Rep. of Germany, assignor to Schenck-Auto-Service-Geräte GmbH, Fed. Rep. of Germany

Filed Jul. 12, 1983, Ser. No. 512,975
Claims priority, application European Pat. Off., Jul. 28, 1982, 82106805.3
Int. Cl.³ G01M *1/08, 1/22*
U.S. Cl. 73—462 **1 Claim**

1. An unbalance measuring device for determining the unbalance of a rotor according to position and magnitude for a balancing machine having a drive motor, transducers, a spindle supporting the rotor to be balanced, an increment disc fixed to the spindle, a filter control for analog signals for suppressing extraneous signals by means of frequency control with a high

control frequency, characterized in that a specific control input of the filter with switched capacitors for analog signals is



activated by impulses from each increment of the increment disc for each revolution of the increment disc.

4,484,475

METHOD OF MEASURING CONTACT STRESS AT CONTACTING SURFACES OF ABUTTING SOLID MASSES

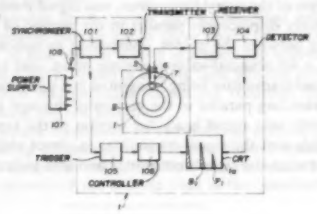
Yukio Ogura, Chiyodamura, and Takeshi Miyajima, Makabemachi, both of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

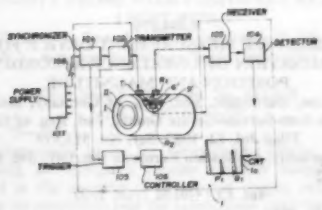
PCT No. PCT/JP82/00087, § 371 Date Nov. 9, 1982, § 102(e) Date Nov. 9, 1982, PCT Pub. No. WO82/03672, PCT Pub. Date Oct. 28, 1982

PCT Filed Mar. 30, 1982, Ser. No. 444,391

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—579 **11 Claims**





1. A method of measuring contact stress, comprising the steps of:

(1) causing an ultrasonic wave to impinge upon the contacting surfaces of first and second abutting masses of an object;

(2) detecting the relative amplitudes of acoustic pressure of a first portion of the wave which is reflected by the contacting surfaces, and of a second portion of the wave, which is transmitted through the contacting surfaces, relative to one another; and

(3) determining the contact stress at the contact surfaces, said contact stress being a function of the relative amplitudes of acoustic pressure of the first and second portions of the wave.

4,484,476

ACOUSTIC MICROSCOPE DEVICE

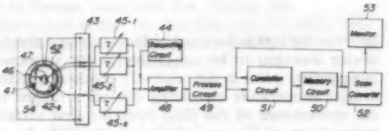
Tatsuo Nagasaki, Musashino, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Nov. 9, 1982, Ser. No. 440,431

Claims priority, application Japan, Nov. 12, 1981, 56-180297

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—606 **9 Claims**



1. An acoustic microscope device for producing an image of a specimen to be inspected comprising:

an acoustic surface wave propagating medium for contacting a specimen;

a plurality of electrodes arranged along a straight line on said medium with a given pitch and constructed to generate an acoustic surface wave along a surface of the medium;

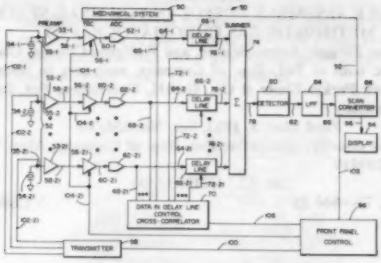
circuit means connected to said electrodes for coupling a least selected ones of said electrodes such that acoustic surface waves are radiated from said selected electrodes along the surface of the medium to scan a specimen so that the acoustic surface waves are modulated in accordance with the difference in acoustic impedance between the specimen and medium thereby causing reflected acoustic surface waves which are received by said electrodes; and

a plurality of phase difference providing means coupled to said circuit means for causing the acoustic surface waves generated by said selected electrodes to have phase differences such that the acoustic surface waves are focussed at a focal point on said medium, said circuit means and phase difference providing means being further constructed and arranged to select the position and number of electrodes and vary the phase differences such that the focal point is moved two-dimensionally over the surface of the medium so that the reflected acoustic surface waves received by said selected electrodes enable the formation of a tomographic image of the specimen adjacent a surface of the specimen in contact with said medium.

4,484,477
VARIABLE DELAY MEMORY SYSTEM

James L. Buxton, Palo Alto, Calif., assignor to S R I International, Menlo Park, Calif.

Filed Sep. 29, 1982, Ser. No. 427,693
Int. Cl.³ G01N 29/00; G06F 13/06
U.S. Cl. 73—626 6 Claims

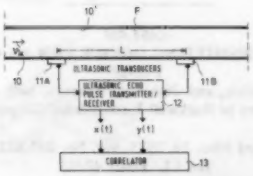


1. A variable delay memory system, which comprises an addressable memory means having a data input port and a data output port, a means connected to supply a write address for storage of data supplied to the data input port of said memory means, a read address determining means connected to receive the write address as one input and a second input proportional to a variable delay time, said read address determining means being configured to calculate a read address by modifying the write address with the second input, said read address determining means having an output connected to supply the calculated read address determined from the write address and the second input for data stored in said memory means to be supplied at the data output port.

4,484,478
PROCEDURE AND MEANS FOR MEASURING THE FLOW VELOCITY OF A SUSPENSION FLOW, UTILIZING ULTRASONICS

Eino Härkönen, Halliruskatu 9 as 13, 90100 Oulu 10, Finland

Filed Sep. 30, 1982, Ser. No. 432,367
Claims priority, application Finland, Oct. 19, 1981, 813259
Int. Cl.³ G01F 1/74
U.S. Cl. 73—861.06 16 Claims



1. A method of ultrasonically measuring the flow velocity of a suspension flowing through a pipe, said pipe having a surface, said method comprising the steps of

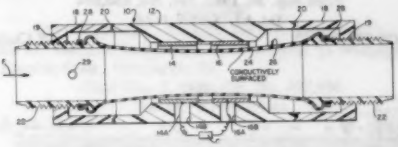
transmitting and receiving ultrasonic echo pulses from said surface of said pipe from points spaced from each other a predetermined distance in the direction of flow through said pipe into said suspension flow, said ultrasonic pulses passing through said suspension and being received after a time determined by the measuring depth, the received pulses including a low frequency signal caused by fibres and other particles in said suspension;

detecting the amplitudes of said low frequency signals and producing signals in accordance with said amplitudes; and correlating said signals to determine the flow velocity of said suspension.

4,484,479
GAS FLOW METERING

Richard Eckhardt, c/o ECD Corp., 196 Broadway, Cambridge, Mass. 02139

Filed Apr. 5, 1978, Ser. No. 893,679
Int. Cl.³ G01L 9/12; G01F 1/38
U.S. Cl. 73—861.47 7 Claims



1. Flow metering instrument comprising a casing, a a tubular flow through passage in said casing, a membrane stretched taut in said flow passage and arranged to deflect in accordance with flow back pressure changes to an extent in accordance with Bernouilli's principle,

means on the interior of said casing providing a signal directly responsive to the deflection of the membrane by measuring capacitance change,

means defining a conductive surface on said stretched membrane,

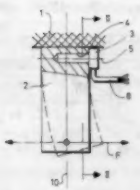
said signal providing means comprising means defining a capacitive gap between said means on the interior of said casing and the said conductive surface,

whereby the said deflection of the membrane will vary the size of the capacitive gap and thereby vary an electrical signal obtainable through use of said gap.

4,484,480
LOAD MEASURING APPARATUS

Norbert Mucheyer, Rechtenbach, Fed. Rep. of Germany, assignor to Mannesmann Rexroth GmbH, Lohr am Main, Fed. Rep. of Germany

Continuation of Ser. No. 254,286, Apr. 15, 1981,. This application Jun. 27, 1983, Ser. No. 507,960
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1980, 3016348
Int. Cl.³ G01L 1/00
U.S. Cl. 73—862.64 8 Claims



1. A load measuring apparatus for being secured to a main body to determine a load affecting a predetermined point of a mechanical system, comprising:

solid state means to which said load is directly transmitted and having a recess formed therein; and

a load detecting sensor unit incorporated within said solid state means for producing an electrical signal proportional to said load, wherein said solid state means further comprises a cantilever type beam portion having a protruding end under load and, adjacent its fixed point to said main body, a portion containing said sensor unit, and wherein said sensor unit further comprises a sensor body and being

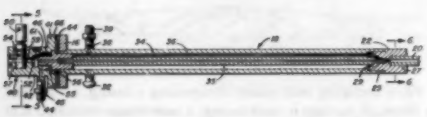
secured within said recess in said cantilever beam adjacent a fixed portion thereof at a pressure side of the beam such that said recess runs parallel to the direction of load introduction and positively receives said sensor unit.

4,484,481

GAS SAMPLING EXTRACTOR AND CONDITIONING ASSEMBLY

Daniel G. Laird; James C. Laird, and Robert L. Tomlin, all of Waldron, Ark., assignors to Sampling Technology, Inc., Waldron, Ark.

Filed Sep. 30, 1982, Ser. No. 430,844
Int. Cl.³ G01N *1/24*
U.S. Cl. 73—863.12 **28 Claims**



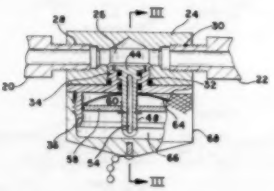
1. A gas sampling extractor for extracting a gas sample from a gaseous source for analysis comprising an elongate tubular filter housing having a flanged end and an oppositely disposed terminal end portion, said filter housing including a tubular probe assembly and a coaxial tubular extension mounted on said terminal end of said housing; a tubular ceramic filter element coaxially mounted within said housing coextensively therewith and dimensioned to define a cell therebetween, an eductor including an eductor body having a flange connected to the opposite flanged end of said filter housing; valve means in said eductor body moveable between first and second controlling positions, and a compound seal interposed between said filter housing and said eductor, said compound seal including a non-metallic gasket which contacts the housing flange and a flexible metallic diaphragm which contacts the eductor body flange.

4,484,482

FLUID SAMPLING VALVE

Paul J. E. Fournier, and Richard M. Alexander, both of Jackson, Mich., assignors to Aeroquip Corporation, Jackson, Mich.

Filed Dec. 16, 1982, Ser. No. 450,370
Int. Cl.³ G01N *1/10*
U.S. Cl. 73—863.85 **3 Claims**



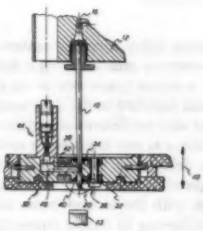
1. A fluid sampling valve for internal combustion engines and the like, comprising, in combination, a body, a passage defined in said body having an inlet and an outlet, a valve element receiving orifice defined in said body intersecting said passage, a valve element within said orifice movable between open and closed positions wherein fluid within said passage flows through said orifice when said valve element is in said open position, sealing means defined adjacent said orifice, said valve element engaging said sealing means at said closed position, said valve element including a proboscis having a free end, a flow passage defined within said valve element and proboscis having an inlet adjacent said sealing means and an outlet intersecting said free end, fluid flowing through said orifice flowing through said flow passage, and sample collecting container engaging means defined upon said proboscis and radially extending therefrom for actuation of said valve element between said open and closed positions by engagement with an annular open end of a sample collecting container.

4,484,483

NEEDLE ASSEMBLY USEFUL IN THE HEAD-SPACE METHOD OF GAS CHROMATOGRAPHY

Wolfgang Riegger, Salem-Beuren, and Wolfgang Chlosta, Uberlingen, both of Fed. Rep. of Germany, assignors to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Filed Mar. 3, 1982, Ser. No. 354,409
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1981, 3109616
Int. Cl.³ G01N *35/00*
U.S. Cl. 73—864.23 **7 Claims**



1. A needle assembly for feeding a carrier gas into the head space of a sample vessel sealed by a diaphragm, said assembly comprising:

a hollow needle affixed to an analytical instrument, said needle having a lateral exit aperture at the lower end thereof;

a housing movable with respect to said needle, said housing including a bore therethrough for guiding said needle, said bore branching into a lateral outlet passage, said passage communicating with said lateral exit aperture in said needle, when said housing is in a first position, said passage opening to the atmosphere through a restrictor, whereby when said housing is in a second position said communication between said bore and said passage is prevented.

4,484,484

POWER TRANSMITTING DEVICE FOR AN OIL WELL PUMP

Ronald L. Wissink, and James A. Munsch, both of Oshkosh, Wis., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Mar. 19, 1981, Ser. No. 245,472
Int. Cl.³ F04B *47/02*
U.S. Cl. 74—41 **7 Claims**

4. A method of making a power transmitting device for an oil well pump of the type which utilizes a rotating power source and provides an output capable of operating crank means for driving a reciprocating pump means, said method comprising:

providing components from an automotive drive system, said components including an input shaft capable of being operably connected to said power source, a pinion bevel gear means mounted on said input shaft, a differential casing having ring gear means mounted thereon, a pair of planetary gear reducers including a sun gear, ring gear and a plurality of planetary gears mounted within a wheel hub to which said crank means can be secured, first bearing means for said input shaft, second bearing means for

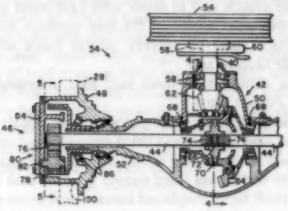
said differential casing and third bearing means for said wheel hub;

forming a connecting element with a central bore therethrough;

mounting said connecting element within said differential casing;

forming a housing having a central portion and two outwardly extending tubular portions;

installing said input shaft on said first bearing means and said differential casing on second bearing means within said central portion of said housing with said pinion bevel gear means and said ring bevel gear means in meshing engagement forming a pair of output shafts;



installing a first end of each of said output shafts rigidly within said central bore at opposite sides of said connecting element with said each of said output shafts extending outwardly therefrom within an interview of said tubular portions of said housing; and

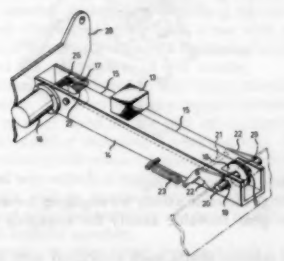
mounting one of said planetary gear reducer on an extended end of each of said tubular portions with said ring gear being rigidly mounted thereon, said wheel hub being mounted for rotation at said third bearing means about the outer surface thereof, and said sun gear being rigidly secured to a second end of said output shaft for rotation therewith.

4,484,485

CARRIAGE DRIVE MEANS USING CABLES OR THE LIKE

Koh Matsuhisa, Yokohama, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Oct. 9, 1981, Ser. No. 310,292
Claims priority, application Japan, Oct. 20, 1980, 55-145620
Int. Cl.³ F16H *29/02, 7/14;* B41J *19/30*
U.S. Cl. 74—89.22 **6 Claims**



1. Drive means for transmitting a drive force generated by a motor through an elongate drive element, having a tensioning means for said drive element, wherein said elongate drive element extends around a movable pulley, and said motor, pulley, and tensioning means are mounted on a stay having axial compressive rigidity, the tensioning means comprising:

means including a segmental cam mounted on said stay for pivotal movement, said cam having a lever end and a cam surface in frictional engagement with a shaft of said pulley;

a spring mounted on said stay and connected to the lever arm of said cam, wherein said cam surface biases said pulley in a direction for tensioning the drive element;

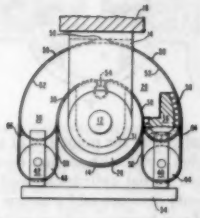
said cam biased by said spring constituting a self-locking mechanism by which said cam is moved pivotally by said spring to compensate for any elongation of said drive element, when elongation occurs, and is prevented from moving in the direction of its original position.

4,484,486

CONCENTRIC PULLEY DRIVE ASSEMBLY

John H. Staehlin, Lutherville, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 3, 1981, Ser. No. 327,156
Int. Cl.³ F16H *21/12*
U.S. Cl. 74—96 **9 Claims**



1. A concentric pulley drive assembly comprising:

a base,

a motor including an axle protruding therefrom which is rotatably driven by said motor;

a frame fixedly mounted to said base for supporting said motor and axle thereof away from said base;

a first substantially circular pulley disposed on said motor axle and being rotatably driven therewith;

at least one second pulley shaped as a partial annulus disposed about a substantial portion of the periphery of said first pulley concentrically with respect to said motor axle, a portion of the periphery of said second pulley closest concentrically to the motor axle is juxtaposed with said substantial portion of the periphery of said first pulley;

means for transmitting torque from said first pulley to said second pulley to induce annular rotation of said second pulley about the periphery of said first pulley with respect to said motor axle and commensurate with the rotation of said first pulley; and

a support structure coupled to said second pulley and pivotally positionable about said motor axle in conjunction with the annular rotation of said second pulley.

4,484,487

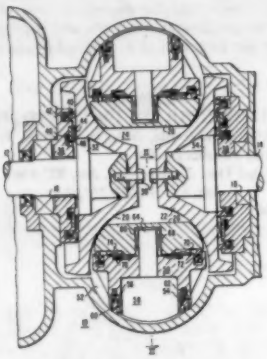
HYDRAULICALLY CONTROLLED INFINITELY VARIABLE TRACTION ROLLER TRANSMISSION

Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed Jan. 3, 1983, Ser. No. 455,121
Int. Cl.³ F16H *15/08, 15/00, 15/16*
U.S. Cl. 74—200 **13 Claims**

1. An infinitely variable traction roller transmission comprising a housing; coaxial input and output shafts rotatably supported in said housing; two toric discs supported opposite each other one by said input and the other by said output shaft, said toric discs having opposite toric surfaces defining therebetween a toric cavity of circular cross-section; at least two motion transmitting traction rollers disposed between said toric discs, each being in engagement with said toric discs for the transmission of motion therebetween; a pivotal support

structure rotatably supporting said traction rollers and being pivotally supported in said housing so as to permit changing of the ratio of motion transmission between said input and output toric discs, said housing having a partial cylindrical wall section forming a cavity adjacent each of said trunnions, said partial cylindrical wall section having a center of curvature



coinciding essentially with the pivot axis of said trunnion, and said trunnion having walls with sealing means in sealing engagement with said partial cylindrical wall section so as to form a support cavity between said trunnion and the cylindrical wall section of said housing; and means for admitting pressurized fluid to said support cavity so as to provide for support of said trunnion on said cylindrical housing wall section.

4,484,488

FORWARD-REVERSE CHANGEOVER APPARATUS FOR WORKING VEHICLE

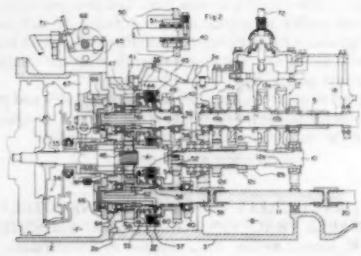
Keizo Kato, Sakai, and Yasunobu Yamaue, Izumi, both of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Apr. 21, 1982, Ser. No. 370,303

Claims priority, application Japan, Sep. 29, 1981, 56-155369; Dec. 14, 1981, 56-201908

Int. Cl.³ F16H *3/14, 3/08*

U.S. Cl. 74—361 **5 Claims**



1. A forward-reverse changeover apparatus for a working vehicle comprising

an input shaft,

an output shaft arranged coaxial with and separated from said input shaft,

a first intermediate shaft for a reverse rotation disposed parallel to said input shaft,

a second intermediate shaft for a forward rotation disposed parallel to said input shaft, said second intermediate shaft constituting part of a power takeoff to transmit power to a power takeoff shaft,

an output gear fixed to said input shaft,

an input gear fixed to said output shaft,

a first multiplate clutch disposed on said second intermediate shaft,

a second multiplate clutch disposed on said second intermediate shaft,

a first gear in mesh with said output gear and fixed to said second intermediate shaft upstream of said first multiplate clutch,

a second gear in mesh with said output gear and fixed to said first intermediate shaft upstream of said second multiplate clutch,

a second output gear mounted for free rotation on said second intermediate shaft to receive power from said first multiplate clutch and in mesh with said input gear,

a third output gear mounted for free rotation on said first intermediate shaft to receive power from said second multiplate clutch, and

a back gear disposed between said first intermediate shaft and said output shaft

wherein said first and second gears have an equal number of teeth, and said second and third output gears on said first and second intermediate shafts have a substantially equal number of teeth, said third output gear on said first intermediate shaft being displaced toward said input shaft to be out of contact with said input gear, and said back gear having a large width to mesh with said third output gear on said first intermediate shaft and with said input gear simultaneously.

4,484,489

REVERSE DRIVE CONTROL DEVICE FOR VEHICLE GEARBOX

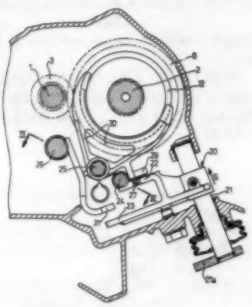
Jean-Jacques Boutant, Rueil-Malmaison, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Aug. 13, 1982, Ser. No. 408,119

Claims priority, application France, Aug. 14, 1981, 81 15744

Int. Cl.³ G05G *9/12*

U.S. Cl. 74—473 R **1 Claim**



1. In a vehicle gearbox having:

(a) sliding rings movable axially for engaging forward ratios,

(b) an idler gear movable axially for engaging a reverse drive,

(c) forward selector shafts, each associated with one of said sliding rings and axially shiftable for moving said ring between an intermediate neutral position and end engagement positions,

(d) a reverse drive selector shaft axially shiftable for moving said idler gear between a rest position not in engagement and an active position in meshing engagement with first and second reverse gears,

(e) forward notched yokes, each fixed to one of said forward selector shafts for operating said shafts,

(f) a reverse drive notched yoke fixed to said reverse drive selector shaft,

(g) a gear ratio selector and engagement control element having a forward peg with a first end head engageable selectively in notches of said forward notched yokes, and a reverse drive peg with a second end head engageable selectively in a notch of said reverse drive notched yoke, said element being movable in rotation around an axis by a determined angular stroke from a neutral position for operating axially the selected notched yoke, the improvement wherein:

(h) said idler gear is rotatably mounted directly on said reverse drive selector shaft to be axially carried thereby,

(i) one of said first and second reverse gears is fixed to one of said sliding rings and is axially movable therewith, and

(j) said second end head of said reverse drive peg is substantially twice as distant from said axis of said control element as said first end head of said forward peg,

whereby said determined angular stroke causes an axial stroke of said reverse drive selector shaft, when selected, greater than the axial strokes of said forward selector shafts, when selected, to such an extent that said idler gear in said rest position cannot engage said one reverse gear fixed to said sliding ring when shifted in its engagement positions toward said rest position.

4,484,490

BRAKE OPERATING DEVICE FOR A BICYCLE

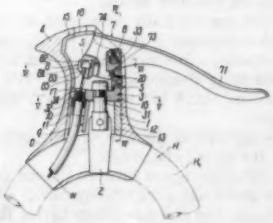
Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Oct. 27, 1981, Ser. No. 315,458

Claims priority, application Japan, Nov. 6, 1980, 55-159258; Nov. 6, 1980, 55-159259; Nov. 6, 1980, 55-159260

Int. Cl.³ G05G *11/00*; F16C *1/10*

U.S. Cl. 74—489 **7 Claims**



1. A brake operating device for a bicycle comprising:

a fixing member adapted to be fixed to a bicycle handle, said fixing member including: a mounting member; a bracket member comprising a front wall, a rear wall, a pair of side walls and an upper wall; and, a tightening means for securing said bracket member to said handle;

an operating lever pivoted to said fixing member through a lever shaft, said lever having a support member for retaining a retainer fixed at one end of a control wire, said support member including a retaining bore for receiving and retaining said retainer, a wire-insertion bore for inserting said wire which is smaller in diameter than said retaining bore, and an opening through which said retaining bore and wire insertion bore are open radially one-sidedly of said support member,

said mounting member being provided with a through bore permitting insertion of said wire therethrough and retaining an outer stop for an outer sheath guiding said wire, said bracket member having a guide for guiding said control wire, outer sheath and said outer stop to said through bore, said guide comprising a guide body and a pair of risings extending therefrom, each of said risings having a guide face having a circular arc cross-sectional shape, said support member being pivotally swingably supported to said lever and having a slope for guiding said retainer to said retainer bore, said support member being adapted to be pushed by said retainer to swing and thereby guide said retainer into said retainer bore whereby said outer stop is also retained at said through bore.

4,484,491

TRANSMISSION SYSTEMS

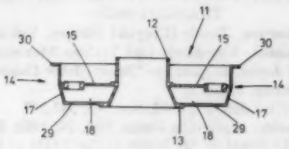
Harry Cocking, Stoford, Nr. Yeovil, England, assignor to Westland plc, Somerset, England

Filed Jun. 15, 1982, Ser. No. 388,637

Claims priority, application United Kingdom, Jun. 17, 1981, 8118927

Int. Cl.³ F16H *57/02*; B64D *35/00*; B64C *11/00, 27/46*

U.S. Cl. 74—606 R **9 Claims**



1. A gearcase for a helicopter transmission including a generally tubular non-rotating stub axle, an output gear rotationally fixed adjacent an upper end of the axle and adapted during operation for connection to a sustaining rotor, attachment means adjacent a lower end of the axle for connecting the gearcase to a helicopter fuselage whereby all operational loads are transmitted through the stub axle directly to the fuselage, a support flange extending generally radially from the stub axle, a hollow casing supported by the support flange and a speed reducing gear train connected with said output gear housed within said hollow casing.

4,484,492

DEVICES FOR SELECTIVELY COUPLING TO A SHAFT TO BE DRIVEN TWO SEPARATE DRIVING MEMBERS

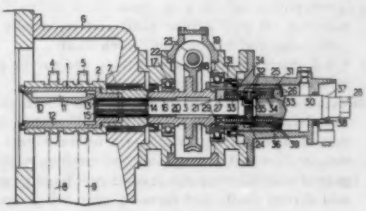
Raymond Cadic, Cherbourg, France, assignor to Societe d'Exploitation des Procedes Felix Amiot, Paris, France

Filed Mar. 3, 1982, Ser. No. 354,201

Claims priority, application France, Mar. 13, 1981, 81 05102

Int. Cl.³ F16H *37/06*; B63H *1/06*

U.S. Cl. 74—625 **8 Claims**



1. A device for selectively coupling to a shaft to be driven by two separate driving members, one of which is the output shaft of a motor and the other of which is a hand-driven operating member, comprising two coaxial inwardly splined ring-wheels which are axially contiguous and are integral respectively, a first ring-wheel being integral with the output shaft of the motor and a second ring-wheel being integral with the shaft to be driven, an outwardly splined hub adapted to coact with the two splined ring-wheels and means adapted to move axially this hub which remains always engaged with the second ring-

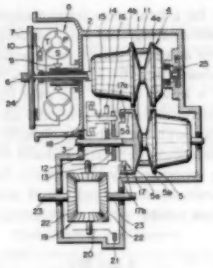
wheel so as to couple it to the first ring-wheel or on the contrary to uncouple it therefrom, characterized in that it further comprises a third inwardly splined ring-wheel (16) which is similar to the first two ring-wheels (13,14) and is rotatably mounted in a frame (19) in a position axially contiguous to the second ring-wheel (14), on the side thereof opposite the first ring-wheel (13), a tangent wheel (22) integral with this third ring-wheel, an endless screw (23) coacting with the tangent wheel and actuatable by a first rotary manual control member, and screw means for controlling, from a second rotary manual control member, the axial sliding of the splined hub (15) so as to cause it to coact either with the first ring-wheel or with the third one.

4,484,493

CONE PULLEY V-BELT CONTINUOUSLY VARIABLE TRANSMISSION

Sigeaki Yamamuro, Zushi; Hiroyuki Hirano, Yokosuka; Yoshikazu Tanaka, Yokohama, and Yoshiro Morimoto, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 27, 1982, Ser. No. 343,277
Claims priority, application Japan, Feb. 24, 1981, 56-24970
Int. Cl.³ F16H *37/00*; F16D *21/04*; F16H *11/00*
U.S. Cl. 74—689 **1 Claim**



1. A continuously variable transmission for a motor vehicle, comprising:

a driving shaft;

a driven shaft;

a driving pulley including an axially fixed pulley disc fixedly mounted on said driving shaft and an axially movable pulley disc slidable on said driving shaft;

a driven pulley including an axially fixed pulley disc fixedly mounted on said driven shaft and an axially movable pulley disc slidable on said driven shaft;

a V-belt interconnecting said driving and driven pulleys;

a differential having a ring gear; and

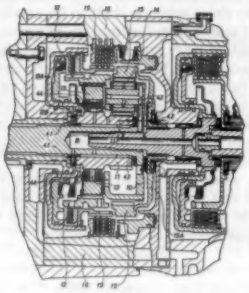
direction-change gearing driven by said driven shaft and in turn driving said ring gear of said differential, said direction change gearing including a forward gear rotatably mounted on said driven shaft and meshing with said ring gear of said differential, a reverse gear fixedly mounted on said driven shaft, said forward gear being mounted between said driven pulley and said reverse gear, an intermediate shaft, an intermediate gear rotatably mounted on said intermediate shaft and meshing with said reverse gear, an idler gear fixedly mounted on said intermediate shaft and meshing with said ring gear of said differential, a first multiple disc friction clutch selectively connecting said forward gear to said driven shaft, and a second multiple disc friction clutch selectively connecting said intermediate gear to said intermediate shaft, wherein said first multiple disc friction clutch is disposed in an annular recess formed in said axially fixed cone pulley disc of said driven pulley.

4,484,494

OVERDRIVE UNIT IN AUTOMATIC TRANSMISSIONS

Shiro Sakakibara, Toyokawa, Japan, assignor to Aisin Warner Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 179,484, Aug. 19, 1980, Pat. No. 4,387,607. This application Apr. 25, 1983, Ser. No. 488,620
Claims priority, application Japan, Aug. 30, 1979, 54-111262
The portion of the term of this patent subsequent to Jun. 14, 2000, has been disclaimed.
Int. Cl.³ F16H *57/10*
U.S. Cl. 74—781 R **1 Claim**



1. An overdrive apparatus in an automatic transmission, comprising:

a planetary gear set including a sun gear, a ring gear and at least one planetary pinion in mesh with the sun gear and the ring gear;

an input shaft concentrically linked with a rotating carrier supporting the planetary pinion;

an output shaft concentrically linked with the ring gear;

a first clutch disengageably coupling the sun gear with the carrier including a first and second clutch hub, said first clutch hub being concentrically linked with the carrier and the second clutch hub being rotatable together with the sun gear;

a brake disposed between the housing of the overdrive apparatus and the second clutch hub;

a one-way clutch positioned between the sun gear and the carrier for overrunning the rotating carrier when the sun gear is braked, said one-way clutch having first and second races connected to said carrier and said sun gear; and

thrust bearing means interposed between the sun gear and the rotating carrier for supporting any thrust load produced between the sun gear and the rotating carrier and wherein a gap is formed between the one-way clutch and a connection portion between the sun gear and the second clutch hub.

4,484,495

DIFFERENTIAL DRIVE MECHANISM

Murray R. Mason, Kent Bridge, Canada, assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 22, 1982, Ser. No. 370,447
Int. Cl.³ F16H *57/10*; B60K *41/24*; F16D *11/06*
U.S. Cl. 74—785 **11 Claims**

1. A differential drive mechanism comprising:

a rotatable driving member;

a rotatable driven member rotationally supported relative to said driving member; said driven member defining an engagement surface rotatable therewith; said driven member supporting a plurality of planetary gears for rotation thereabout;

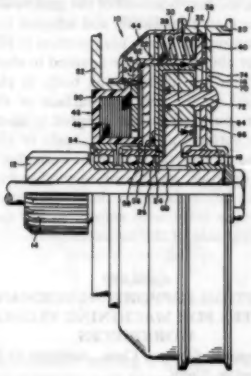
a sun gear rotationally mounted with said driving member for drivingly engaging said planetary gears;

a ring gear rotationally isolated relative to said driving mem-

ber and coaxially positioned in meshing engagement relative to said planetary gear;

clutch means including a first support mounted to and rotatable with said ring gear, said first support including a plurality of spaced apertures, said clutch means further including axially extending support means movably extending through said apertures, said support means defining a movable pressure plate positioned in mating engagement with said first engagement surface, said pressure plate engaging said first engagement surface; said support means further including a circumferentially extending portion which defines a radially inwardly projecting, circumferentially extending second engagement surface,

spring means positioned between said first support and said support means for biasing said pressure plate towards said first engagement surface;



said clutch means further including:

an electromagnetic actuator including a coil fixed relative to the rotation of said driving member, axially movable armature means positioned between said second engagement surface and said first support and carrying therewith friction material for engagement with said second engagement surface, for moving said support means axially to move said pressure plate out of engagement with said first engagement surface and for rotationally fixing said support means, said first support and said ring gear in response to electromagnetic forces generated by said coil, said armature including an aperture and said electromagnetic actuator further including means slidably engaging said aperture for rotationally restraining said armature.

4,484,496

SERVO DRIVE, PARTICULARLY FOR DRIVING OUTPUT SHAFTS OF SLIDE VALVES

Alfred Weis, Olpe, Fed. Rep. of Germany, assignor to Elektro-Mechanik GmbH, Fed. Rep. of Germany

Filed Sep. 20, 1982, Ser. No. 420,315

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1981, 3138004

Int. Cl.³ F16H *1/28, 37/06, 3/44*

U.S. Cl. 74—804 **2 Claims**

1. A servo drive for driving an output shaft for valves and similar devices, comprising:

a gear housing;

drive means mounted on said housing;

an eccentric driven by said drive means and being rotatable around the output shaft;

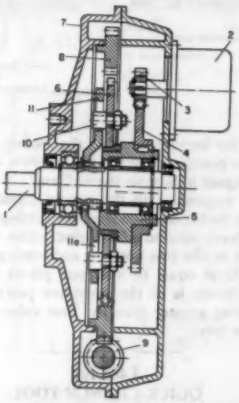
a planetary gear train including said eccentric with an externally toothed inner gear mounted on said eccentric and driven thereby;

an internally and externally toothed outer gear having an internal gear portion in engagement with said inner gear and having an outer gear portion;

a worm rotatably mounted in said housing and self-lockingly engaged with said outer gear portion of said internally and externally toothed outer gear;

a plurality of round bolts of equal diameter arranged in spaced circumferential locations in a first circle around a center of said inner gear and being spaced from each other by equal lengths of arc, said bolts protruding in one axial direction from said inner gear; and

a perforated disc connected to the output shaft and having a disc portion oriented parallel to said inner gear with a plurality of circumferentially spaced round holes of the same number as said round bolts and spaced around a second circle of the same size as said first circle and of a greater diameter than said round bolts, said round bolts



engaging through said holes and touching edges of said perforated disc bounding said holes, said output shaft being rotatably mounted to said gear housing about a center of rotation, said drive means comprising a motor connected to said housing at a location spaced from said center of rotation, a first drive gear connected to said motor for rotation by said motor, a second drive gear connected to said eccentric and meshed with said first drive gear for rotation of said eccentric by rotation of said motor, said worm being connected to said housing at a location spaced further from said center of rotation than a spacing between said center of rotation and said motor, said worm holding said outer gear fixed when said worm is not rotated and rotating said outer gear when said worm is rotated so that said output shaft can be rotated by one of said motor and said worm.

4,484,497

FUEL CUT-OFF SYSTEM FOR AN ENGINE COUPLED TO AN AUTOMATIC POWER TRANSMISSION WITH A LOCKUP DEVICE

Masahiro Hibino, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 12, 1983, Ser. No. 541,039

Claims priority, application Japan, Oct. 14, 1982, 57-180364

Int. Cl.³ F02D *5/00*

U.S. Cl. 74—859 **5 Claims**

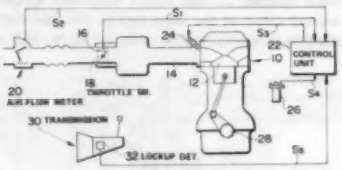
1. A fuel cut-off system for an engine coupled to an automatic power transmission having a lockup device changeable between an operative position and a rest position, the lockup device being responsive to the speed of the engine such that the lockup device is in the operative position when the engine speed is higher than a preset lockup reference level and is in the

rest position when the engine speed is not higher than the lockup reference level, the system comprising:

(a) means for sensing when the engine is required to decelerate and generating a deceleration signal indicative thereof;

(b) means for sensing the speed of the engine and generating a speed signal indicative thereof;

(c) fuel-control means, responsive to the deceleration signal and the speed signal, for supplying fuel to the engine when the engine is required to decelerate and the engine speed is lower than an adjustable fuel-supply control level, and for interrupting the supply of fuel to the engine when the engine is required to decelerate and the engine speed is not lower than the fuel-supply control level;



(d) means for sensing whether the lockup device is in the operative position or in the rest position and generating a lockup signal indicative thereof; and

(e) means, responsive to the lockup signal and associated with the fuel-control means, for setting the fuel-supply control level equal to a first preset value when the lockup device is in the rest position and setting the fuel-supply control level equal to a second preset value when the lockup device is in the operative position, the second value being greater than the first value and the lockup reference level.

4,484,498

QUICK-CHANGE TOOL

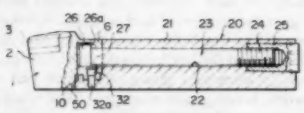
Shigeyuki Kanno, and Hajime Matsubara, both of Kawasaki, Japan, assignors to Toshiba Tungaloy Co., Ltd., Kawasaki, Japan

Filed Oct. 18, 1983, Ser. No. 543,055

Claims priority, application Japan, Oct. 19, 1982, 57-183365; Jan. 26, 1983, 58-9618[U]

Int. Cl.³ B23B *29/00;* **B23P** *15/28;* **B26D** *1/00, 3/00*

U.S. Cl. 82—36 B **17 Claims**



1. A quick-change tool comprising a shank assembly and a cutting head cartridge detachably mounted on the shank assembly, the shank assembly comprising a shank body having an axial bore and a front end portion, and a draw bar member which has a front end having a plug portion and is slidably held in the axial bore, the cutting head cartridge comprising a cartridge body and a cutting insert fixed to the cartridge body, the cartridge body being provided with a rear end portion and having a receptacle portion adapted to receive the plug portion therein and being adapted to be mounted on the shank body, means for drawing the draw bar member backwardly with the plug portion received in the receptacle portion to pull the rear end portion of the cartridge body against the front end portion of the shank body, said shank body having a step-like extension projecting forwardly from a lower part of the front end surface of the shank body, the step-like extension having an upper surface adapted to support thereon said receptacle portion and a front end surface forming a lower abutment surface below the axial bore; a key member for laterally locating the cartridge body with respect to the shank body is provided on the step-like extension; an upper abutment surface is formed on the front end surface of the shank body above the axial bore; the plug portion is in the form of a flat enlarged portion which is connected to the body portion of the draw bar member by way of a thin neck portion and has a flat engaging surface facing rearwardly; said receptacle portion is like a gate in shape and comprises a pair of opposed side walls laterally spaced from each other and a cross bar portion connecting the upper end portions of the side walls, the side walls and the cross bar portion defining an entrance through which the neck portion connecting the plug portion to the body of the draw bar member is passed, the receptacle portion being provided with a groove which is formed along the inner surface of the side walls and the cross bar portion inside the entrance and is adapted to receive therein the plug portion from the lower end of the side walls, the rear side wall of the groove defining a flat engaging surface facing forwardly and adapted to be engaged with the engaging surface of the plug portion in plane-to-plane contact; an upper abutment surface adapted to abut against the upper abutment surface of the shank body in plane-to-plane contact is formed on the rear end surface of the cross bar portion; a lower abutment surface adapted to abut against the lower abutment surface of the shank body in plane-to-plane contact is formed on the rear side of the cartridge body; and a pair of laterally opposed wall means adapted to snugly receive therebetween the key member on the shank body to laterally locate the cartridge body with respect to the shank body is formed on the rear side of the cartridge body.

4,484,499

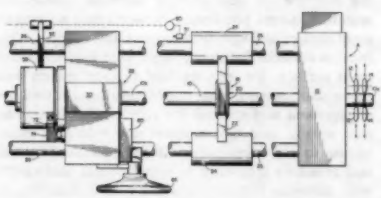
REAR PORTION SUPPORTING MECHANISM IN APPARATUS FOR MACHINING ELONGATED WORKPIECES

Bernard P. Lampietti, Goshen, Conn., assignor to Torin Corporation, Torrington, Conn.

Filed Jul. 1, 1982, Ser. No. 394,339

Int. Cl.³ B23B *5/14*

U.S. Cl. 82—48 **7 Claims**



1. In apparatus for successively machining axially spaced sections of an elongated cylindrical workpiece wherein the workpiece is rotated and successively advanced axially during the machining operation; the combination of a work station including means whereby the workpiece is successively advanced, rotated and machined, an elongated portion of the workpiece extending rearwardly from the work station, elongated guide and support means extending adjacent the rearwardly extending portion of the workpiece, and a workpiece supporting mechanism mounted on said guide and support means and freely movable therealong toward and away from said work station, said mechanism comprising a freely rotatable collet assembly including a cam actuated axially split collet and pad assembly adapted to accept a rearwardly introduced workpiece and firmly grip and release the workpiece, cam follower means on said collet assembly, manual operating means for said collet assembly for selectively causing the collet assembly to firmly grip a rear end portion of the workpiece when a front end portion thereof is presented to the work station for machining, said operating means including a sleeve cam rotatable and axially movable in engagement with

said cam follower means to actuate and open said axially split collet and pad assembly and biasing means in opposition to said sleeve cam for closing said collet and pad assembly, and said operating means having means for release of the workpiece when the workpiece has been successively machined throughout a major portion of its length and when the workpiece supporting mechanism has been correspondingly drawn forwardly along the guide means by the successively advancing workpiece to a position of proximity with the work station.

4,484,500

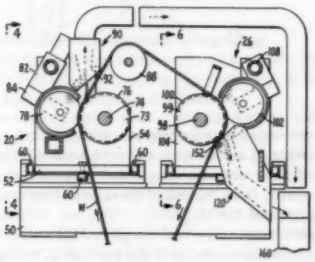
WEB SLITTING AND GROOVING SYSTEM

Imants Reba, Vancouver, Wash.; Rudolph W. Schutz, Walnut Creek, and Nestor Kozbur, Antioch, both of Calif., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Sep. 23, 1982, Ser. No. 422,319

Int. Cl.³ B26D *7/18*

U.S. Cl. 83—98 **6 Claims**



1. In an apparatus for making a spirally wound paper roll product having a bearing wall formed by the convolutions of the roll product, the improvement comprising, in combination:

a framework;

a first paper web cutting assembly mounted on said framework, said first assembly comprising rotatable means having a plurality of spaced grooves formed about the periphery thereof, anvil knives positioned adjacent to said grooves, and a plurality of circular knife blades positioned within said grooves to define spaced shear slitters with said anvil knives for slitting a parent web passing therebetween into separate web segments;

a second paper web cutting assembly mounted on said framework positioned downstream from said first assembly and comprising rotatable means having a plurality of spaced grooves formed about the periphery thereof, anvil knives positioned adjacent to said grooves, and a plurality of circular knife blades positioned within said grooves to define with said anvil knives spaced shear slitters for slitting said parent web segments;

means for selectively moving at least one of said assemblies relative to said framework and transversely relative to the direction of movement of said parent web to form at least one trim segment in said parent web; and

trim segment removal means positioned closely adjacent to said second assembly to exert forces on said trim segment and the remainder of said parent web to remove said trim segment from the remainder of said parent web and direct said trim segment to a predetermined location spaced from the remainder of said parent web, said trim segment removal means including web manipulating means for exerting forces on the remainder of said parent web to facilitate separation between said remainder of said parent web and said trim segment and means for generating a fluid flow closely adjacent to said trim segment for entraining said trim segment and directing it to said predetermined location after said separation, said web manipulating means including at least one web pulling Coanda nozzle positioned adjacent one side of said parent web and adapted to exert a force substantially perpendicular to the web plane and support members for supporting the remainder of the parent web at spaced locations adjacent to opposite sides of said trim segment, said spaced locations being disposed a predetermined distance from said trim segment, and said support members preventing the remainder of said web from moving in the direction of said force and cooperating with said web pulling Coanda nozzle to separate the remainder of the parent web from the trim segment.

4,484,501

APPARATUS FOR CUTTING AND TRIMMING PAPER SHEETS OR THE LIKE

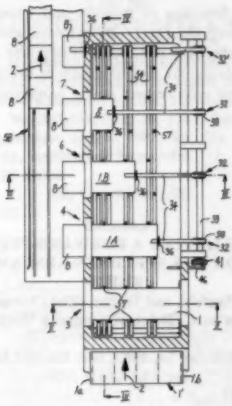
Bernd Ramcke, Hamburg, Fed. Rep. of Germany, assignor to E.C.H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Sep. 14, 1982, Ser. No. 418,091

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1982, 3202753

Int. Cl.³ B26D *5/20*

U.S. Cl. 83—255 **19 Claims**



1. Apparatus for subdividing sheets of multiple unit width, particularly for subdividing paper sheets of multiple unit width into leaves of unit width, comprising advancing means operable to move a succession of sheets stepwise in a predetermined direction along a predetermined path at a right angle to the width of the sheets; a plurality of severing stations disposed in successive portions of said path, as considered in said direction; severing units provided at said stations and each including means for separating a leaf from the sheet at the respective station during the interval of dwell of said advancing means between successive operations thereof to move the sheets from the preceding to the next-following stations; and means for transporting the sheets at said stations at a right angle to said direction prior to separation of leaves from such sheets, and prior to next-following operation of said advancing means, through increments corresponding to said unit width.

4,484,502

WIRE SAW

Walter Ebner, Le Locle, Switzerland, assignor to Caspar O. H. Messner, Zurich, Switzerland

Filed Mar. 11, 1983, Ser. No. 474,514

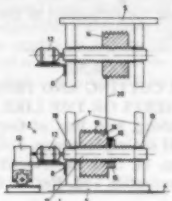
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1982, 3209164

Int. Cl.³ B23D *57/02*; B28D *1/08*

U.S. Cl. 83—651.1 **20 Claims**

1. A wire saw including a reel means for receiving a finite saw wire, said reel means being arranged on a shaft, being provided with thread-like grooves and being displaceable in its

longitudinal axis, a rotary drive means operatively connected with said reel means, and an axially parallel wire holder structure disposed opposite the reel means, whereby the sawing plane is located between the reel means and the wire holder srtucture, characterized in that the wire holder structure includes at least one further reel means with thread-like grooves



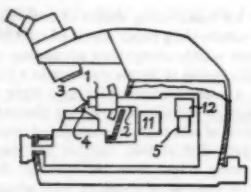
and displaceable in the direction of its longitudinal axis which, as regards its direction of rotation and rotational speed, is synchronized with the rotary drive means and further means operable to displace the reel means in opposite direction to the axial wire displacement and to maintain thereby the cutting plane of the wire with respect to the workpiece.

4,484,503

MICROTOME HAVING A FORWARD-FEED CONTROL SYSTEM FOR THE SPECIMEN ARM AND/OR THE KNIFE

Helmuth Sitte, Seefeld, and Walter Bilek, Vienna, both of Austria, assignors to C. Reichert Optische Werke AG, Vienna, Austria

Filed Jul. 14, 1983, Ser. No. 513,550
Int. Cl.³ G01N *1/06*
U.S. Cl. 83—717 **7 Claims**



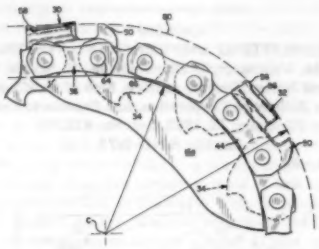
1. A microtome comprising a specimen arm for holding a specimen to be sectioned, a knife for cutting sections from said specimen, a drive means for reciprocating the specimen arm so that said arm moves in a cutting stroke past the knife and in a return stroke, and forward-feed means for incrementally advancing the specimen arm towards the knife before each cutting stroke, the forward-feed means comprising a stepping motor, drive translation means for translating the motion produced by the stepping motor into linear motion of the specimen arm, a pulse generator connected to the stepping motor to supply voltage pulses to operate said motor, electrical circuit means adapted to provide two or more alternate outputs, and selector means connected between the electrical circuit means and the pulse generator for connecting a selected one of the outputs to the pulse generator, whereby the specimen arm may be advanced by a selected one of two or more different increments before each cutting stroke.

4,484,504

SAW CHAIN WITH ANTI-KICKBACK CUTTER LINK

Renwick S. Atkinson, Portland, Oreg., assignor to Carlton Company, Milwaukie, Oreg.

Filed Dec. 30, 1981, Ser. No. 314,583
Int. Cl.³ B27B *33/14*
U.S. Cl. 83—833 **3 Claims**



1. In combination with a chain saw which includes a bar, the bar terminating in a nose with a curved profile and the upper quadrant of such nose curving about a center of curvature located inwardly from the end of the nose and between top and bottom margins of the bar,

a saw chain mounted on said bar guided for movement along top and bottom margins of the bar and over the nose,

said saw chain having left and right-hand cutter links distributed along the length thereof and said cutter links being side links in the chain, said chain further having other links completing the chain, said other links including an opposing side link opposite each cutter link and forward and rear center links partially overlapping forward and rear portions of the cutter link and its opposing side link, means pivotally connecting the links together in the chain including a forward rivet connecting the cutter link and its opposing side link to a forward center link and a rear rivet connecting the cutter link and its opposing side link to a rear center link, each cutter link including a body portion and an elongate cutter portion joined to and projecting outwardly from the body portion and extending along the length of the cutter link, the cutter portion of the cutter link at the forward end thereof being sharpened for cutting purposes and said forward end being located no farther forwardly than the rear of the forward center link, the cutter portion having an outer surface which inclines downwardly toward the body portion of the link progressing rearwardly from the forward end thereof and further having a shoulder adjacent the rear end thereof disposed outwardly from said body portion a greater distance than portions of said inclined outer surface disposed forwardly thereof, said shoulder having a top located rearwardly in the chain from the rear of the rear rivet,

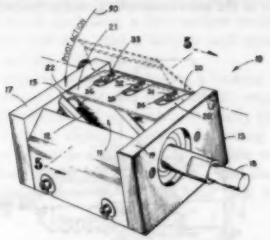
said cutter link further including a depth gauge joined to the body portion spaced forwardly of said cutter portion and projecting outwardly from the body portion of the cutter link, said depth gauge having a top located above a forward rivet in a region disposed between front and rear sides of the forward rivet,

said cutter link when positioned on said upper quadrant of said nose being positionable to place the top of said shoulder and the top of said depth gauge with such lying in an arc centered at the center of curvature of said upper quadrant, said arc with the cutter link so positioned extending above the top of the cutting edge in the cutter portion.

4,484,505
CARPET BEVELING HEAD DEVICE

Michael A. Lewallyn, P.O. Box 1361, Dalton, Ga. 30720

Filed Jan. 14, 1983, Ser. No. 457,966
Int. Cl.³ B26D 3/02
U.S. Cl. 83—869 6 Claims

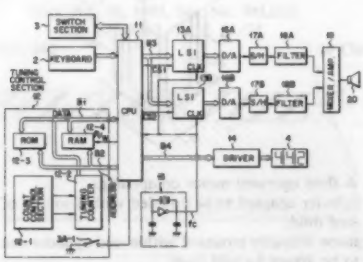


1. A carpet beveling apparatus comprising:
a support body having a first wall portion and a second wall portion defining an opening therebetween, at least one of said wall portions being deformable;
a rotary cutter carried within said supporting body so as to be disposed laterally within said opening;
a pivotally mounted carrier member having two outermost end portions and an elongated aperture extending lengthwise between said end portions;
an adjustable stationary cutting blade secured upon said carrier member so as to traverse said opening defined between said first wall portion and said second wall portion and be in operative engagement with said rotary cutter; and
means for deforming said first wall portion relative to said second wall portion so as to exert a securing end-pressure against said outermost end portions of said carrier member and retain said stationary cutting blade in operative engagement with said rotary cutter, whereby a constant rotational pressure is applied across the length of said stationary cutting blade to prevent deflection thereof.

4,484,506
TUNING CONTROL APPARATUS

Kunio Sato, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1983, Ser. No. 461,161
Claims priority, application Japan, Feb. 1, 1982, 57-13370
Int. Cl.³ G10G 7/02; G10H 1/44
U.S. Cl. 84—1.01 12 Claims

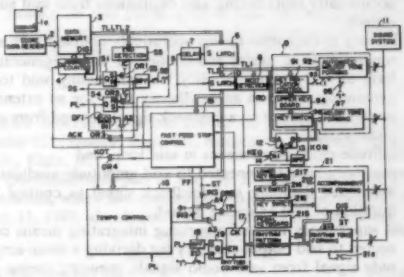


1. In a tuning control apparatus comprising
read only memory means for storing basic frequency data corresponding to each of a set of notes spanning at least one octave;
a tuning device including
tuning data producing means for providing tuning data according to an external operation, and
processing means for processing the basic frequency data read out from said read only memory means and tuning data provided by said tuning data producing means to obtain modified frequency data corresponding to said set of notes spanning at least one octave; and
tone generating means for generating a tone signal with a frequency corresponding to either of said basic frequency data and said modified frequency data;
in combination the improvement wherein said tuning device comprises read/write memory means coupled to said processing means for storing the modified frequency data corresponding to said set of notes spanning at least one octave as obtained from said processing means, wherein said processing means is arranged to selectively transfer the modified frequency data stored in said read/write memory means to the tone generating means for generating a tone signal of corresponding frequency.

4,484,507
AUTOMATIC PERFORMANCE DEVICE WITH TEMPO FOLLOW-UP FUNCTION

Akira Nakada, Hamamatsu; Eisaku Okamoto, Hamakita, and Kiyoshi Yoshida, Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Division of Ser. No. 267,688, May 28, 1981, Pat. No. 4,402,244.
This application Aug. 4, 1983, Ser. No. 520,177
Claims priority, application Japan, Jun. 11, 1980, 55-78784; Jun. 18, 1980, 55-82506
Int. Cl.³ G10F 1/00
U.S. Cl. 84—1.03 29 Claims



1. An automatic performance device with tempo follow-up function comprising:
an operator element,
memory means for storing note-length information of corresponding musical tones to be performed, each said note-length information representing a reference timing which represents a timing to operate said operator element,
read out means for sequentially reading out said note-length information from said memory means in the order in which such corresponding musical tones are to be performed,
control data forming means connected to said memory means and said read out means for forming and outputting control data in response to the operation of said operator element and said note-length information, said control data having a value relating to the time difference between the timings of said operator element operation and said reference timing,
automatic performance means for performing an automatic performance at a certain tempo, and
tempo varying means for varying said certain tempo of said automatic performance in accordance with said control data.

4,484,508

ELECTROACOUSTIC MUSICAL INSTRUMENT WITH CONTROLLED FADE-OUT

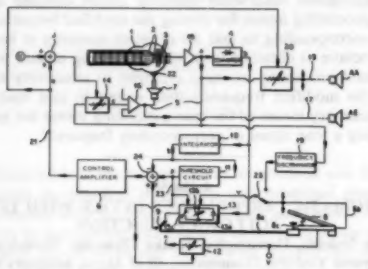
Carl-Ernst Nourney, Am Wagnerast 6, D-4000 Düsseldorf 12, Fed. Rep. of Germany

Filed Feb. 7, 1983, Ser. No. 464,673

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1982, 3204893

Int. Cl.³ G10H *3/26*

U.S. Cl. 84—1.05 **14 Claims**



1. A musical instrument comprising:

vibratile tone-generating means excitable into free oscillations by a player;

electroacoustic transducer means juxtaposed with said tone-generating means for converting the oscillations thereof into electric audio signals;

output circuitry connected to said transducer means for acoustically reproducing said oscillations from said audio signals;

vibratory re-excitation means operatively coupled with said tone-generating means and connected via a regenerative loop to said output circuitry for maintaining said tone-generating means in an oscillatory state for an extended period in response to a feedback signal derived from said audio signals;

amplitude-modulating means in said loop; and

supervisory means connected to said amplitude-modulating means for damping said feedback signal to control the duration of said extended period;

said supervisory means comprising integrating means connected to said output circuitry for deriving a mean-amplitude signal from said audio signals, memory means for storing a peak value of said audio signals occurring immediately upon activation of said tone-generating means, said memory means including a discharge path for progressively reducing the magnitude of the stored value to provide a diminishing reference signal, and comparison means for differentially combining said means-amplitude signal with said reference signal to produce an error signal fed to a control input of said amplitude-modulating means.

4,484,509

BRAKE BOOSTER FOR AN AUTOMOTIVE VEHICLE

Juan Belart, Walldorf, and Franz Wienecke, Oberursel, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

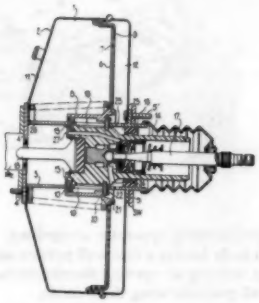
Filed Jul. 26, 1979, Ser. No. 61,113

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1978, 2837911

Int. Cl.³ F15B *9/10*

U.S. Cl. 91—369 A **10 Claims**

1. A brake booster for a braking system comprising a housing having first and second opposing housing walls, a movable wall disposed in the housing between said spaced housing walls and dividing said housing into two chambers, axially aligned input and output members, means interconnecting said movable wall to said output member, a control valve assembly operated by said input member for controlling a pressure differential across said movable wall, a tubular member extending through the movable wall coaxially with the input and output members and connected to the opposing housing walls, said tubular member having longitudinally extending slot means disposed intermediately between said opposing housing walls with a portion of the interconnecting means extending through



the slot means, said control valve assembly including a tubular valve body slidably disposed within said tubular member and having an end adjacent said output member and a portion adjacent said input member, and first and second sliding seals respectively arranged around said end and said portion of said valve body longitudinally enclosing said slot means therebetween said sealing the valve body to the inner surface of said tubular member.

4,484,510

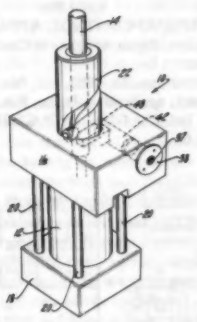
FLUID MOTOR HAVING LOCKABLE HELICALLY DISPLACEABLE OUTPUT SHAFT

Paul M. Hirzel, 17474 Judy Ct., Utica, Mich. 48087

Filed Sep. 1, 1982, Ser. No. 413,916

Int. Cl.³ F15B *15/26*

U.S. Cl. 92—24 **10 Claims**



1. A fluid operated motor comprising:

a cylinder adapted to be coupled with a source of pressurized fluid;

a piston slideably mounted within said cylinder and adapted to be driven by said fluid;

a rotatable output shaft coupled with said piston and adapted to be reciprocated by said piston along the longitudinal axis of the shaft;

means for limiting the displacement of said shaft to a helical pattern upon reciprocation of said shaft by said piston in either direction along said axis; and

means for locking said shaft against longitudinal movement, said locking means including

(1) a notch in one side of shaft,

(2) a locking element receivable in locking relationship within said notch,

(3) means for mounting said locking element for sliding movement into and out of said notch and in a path spaced from and extending transverse to said axis,

(4) said notch including a first surface inclined with respect to said axis, and a bottom wall extending transverse to said first surface,

(5) said locking element including a locking face inclined with respect to said axis and slideably engageable with said first surface of said notch to axially bias said shaft, said locking element further including a generally curved outer face slideably engageable with said bottom wall of said notch for rotating said shaft to achieve registration between said locking face and said first surface.

4,484,511

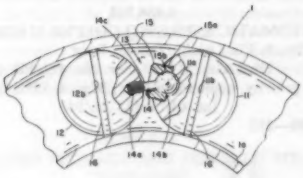
PISTON

Edwin W. Dibrell, San Antonio, Tex., assignor to Centrifugal Piston Expanders, Inc., San Antonio, Tex.

Division of Ser. No. 443,901, Nov. 23, 1982,. This application Dec. 17, 1982, Ser. No. 450,651

Int. Cl.³ F01C *9/00*; F16J *1/00*

U.S. Cl. 92—67 **4 Claims**



1. A piston for use in an arcuate fluid pressure chamber having an arcuate longitudinal axis comprising a pair of generally spherical bodies and universal pivot means interconnecting said spherical bodies in side-by-side relationship to permit relative angular displacement of said spherical bodies as they conjointly move through said arcuate fluid pressure chamber.

4,484,512

SEAL, SCRAPER, AND GUIDE FOR DOUBLE-ACTING PISTON

Jacques Dechavanne, 9, chemin du Gua, Sassenage (Isere), France

Filed Sep. 10, 1981, Ser. No. 301,032

Int. Cl.³ F16J *15/32, 15/24*

U.S. Cl. 92—243 **10 Claims**

1. A double-acting piston and cylinder assembly comprising:

a piston having

an outer piston surface centered on an axis, a radially outwardly open piston groove having a piston-groove base lying radially inside said outer piston surface and a pair of piston-groove flanks transverse to said axis, and

a pair of axially oppositely facing piston ends;

a cylinder having an inner cylinder surface centered on said axis and spaced radially outside said outer piston surface;

a tubularly annular element received in said piston groove and having

an outer element surface centered on said axis and bearing radially outward on said cylinder surface, whereby said piston is guided in said cylinder by said outer element surface,

respective end element surfaces confronting said piston-groove flanks,

an element groove open radially inward to said piston groove base between said end element surfaces and having a pair of axially spaced element-groove flanks,

a pair of seal lips axially level with said element groove and having justaposed seal-lip ends lying in the absence of said cylinder radially outside of said outer element surface but normally bearing against said cylinder surface, radially inner seal-lip surfaces exposed in said element groove, and respective webs generally axially level with said element-groove flanks and axially flanking said seal-lip ends, said seal lips being radially substantially thinner at said webs than at the respective seal-lip ends, said element being formed with an outwardly projecting ridge constituting both of said seal-lip ends and radially outwardly engaging said cylinder surface, and

respective end scraper lips having respective outer scraper-lip ends extending axially beyond said piston ends and lying in the absence of said cylinder radially outside said outer element surface but normally bearing radially outward on said cylinder surface; and

an elastomeric ring in said element groove bearing radially inward on said piston groove base and radially outward on said seal-lip surfaces, whereby said ring urges said lips elastically outward against said cylinder surface.

4,484,513

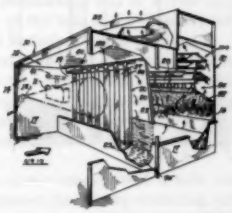
SPRAY BOOTH AND METHOD OF OPERATING SAME

Stanley C. Napadow, Elgin, Ill., assignor to Protectaire Systems Co., Elgin, Ill.

Continuation-in-part of Ser. No. 232,124, Feb. 9, 1981, abandoned, which is a continuation-in-part of Ser. No. 129,484, Mar. 11, 1980, abandoned. This application Apr. 20, 1983, Ser. No. 486,700

Int. Cl.³ B05C *15/00*

U.S. Cl. 98—115 SB **7 Claims**



1. A method of flowing air through a spray booth having an open front face and first and second water washes and a reservior of water below the water washes to trap particulates therein with an efficiency of at least ninety-eight percent, one of said water washes having offset vertically extending baffles and having an air deflecting means behind the baffles to provide an increasing cross sectional area in the downward direction to direct and control air flow in the downward direction at a location behind the baffles, said method comprising the steps of:

flowing the air in a substantial horizontal direction and with a volume of at least 60 cfm across the substantially open front face of the booth and flowing air in a substantially horizontal direction across the workpiece and at a substantially uniform flow rate past the article and across the work area at which the spraying occurs;

flowing water down the generally vertical surfaces of the baffles and impinging some of the air flowing horizontally against the water flowing down the baffles to trap particulates from the air;

flowing the air laterally through slots between adjacent water wash baffles at a substantial uniform rate flow between the upper ends of the baffles adjacent the top of the booth and lower ends of the baffles adjacent the water reservior;

directing the air flow adjacent the top of the booth downwardly through a space between the baffles and the air deflecting means, the space having an increasing cross sectional area in the downward direction so that air flowing downwardly from the location of the upper ends of the baffles at the top of the booth is free to flow downwardly without being substantially impeded by air flow through the lower ends of the baffles below the workarea and above the water reservior;

directing the air flow downwardly and then laterally across the water in the reservior to wet and trap more particulates,

redirecting the air flow upwardly from the reservior to the second water wash means;

spraying water into the upwardly flowing air and entrapping upwardly, moving airborne particulates,

intersecting the upwardly flowing air to remove moisture being carried by air;

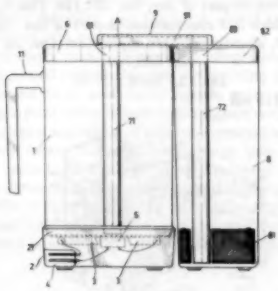
and the discharging of the cleaned air flow from the booth.

4,484,514

BREWING DEVICE FOR COFFEE OR TEA

Chia-Jen Chen, Chung-Shan N. Road, Taipei, Taiwan

Filed Mar. 1, 1983, Ser. No. 471,032
Int. Cl.³ A47J *31/043*
U.S. Cl. 99—282 **16 Claims**



1. A brewing device, comprising:

(a) a pot having an open upper end and a closed lower end;

(b) a lid having an aperture therethrough releaseably sealably secured to said upper end for closing thereof;

(c) heating means associated with said lower end and adapted for heating a fluid in said pot;

(d) a receiver juxtaposed to said pot and having an open upper end and a closed lower end;

(e) a lid having an aperture therethrough releaseably disposed on said receiver upper end for closing thereof;

(f) brewing material receiving means disposed in said receiver adjacent said lower end and adapted for receiving therein a material to be brewed, said brewing material receiving means having an aperture therethrough;

(g) a substantially U-shaped hollow tube interconnecting said pot and said receiver and adapted for permitting fluid flow therebetween;

(h) a first leg of said tube is disposed in said pot and has an upper end thereof releaseably sealably secured in said lid aperture and has a lower end thereof adjacent said pot lower end;

(i) a second leg of said tube is disposed in said receiver and has an upper end thereof loosely disposed in said lid aperture and is adapted to permit venting of said receiver and has a lower end thereof extending through said brewing material receiving means aperture and adjacent said lower end; and,

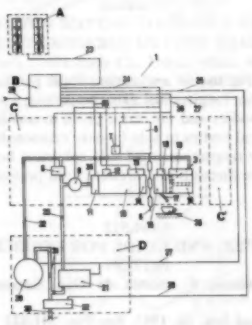
(j) said tube having the base thereof resting on said lids and supporting said tube and maintaining said lower end of each of said legs a predetermined distance from said associated closed lower end whereby heating of fluid in said pot establishes a pressure differential between said pot and said receiver for causing heated fluid to flow through said tube from said pot to said receiver for thereby brewing material in said brewing material receiving means and whereby said brewed fluid flows through said tube from said receiver to said pot in cooperation with a vacuum in said pot caused by cessation of heating by said heating means.

4,484,515

AUTOMATIC ESPRESSO COFFEE MACHINE

Ernesto Illy, 8, Via Locchi, Trieste, Italy

Filed May 3, 1983, Ser. No. 491,065
Claims priority, application Italy, May 4, 1982, 21054 A/82
Int. Cl.³ A47J *31/24*
U.S. Cl. 99—282 **11 Claims**



1. An automatic coffee brewing machine for brewing espresso coffee from a coffee pod disposed in a pressure operated extraction head comprising, a hydraulic pressure operated extraction unit comprising a pair of extraction heads including means for moving the heads of each pair to and from each other, means associated with said extraction unit for positioning a pod of coffee between a pair of separated extraction heads, means for delivering heated water to the pod, positioned in the extraction unit, selective signal means for generating a signal representative of the desired volume of water to be delivered to the extraction head, flow signal generating means for generating a signal representative of the volume of water delivered to said extraction unit, memory and control means, including a microprocessor, for storing data corresponding to a plurality of possible volumes of water to be delivered to each unit, means for receiving selective signals and flow signals, for comparing said received signals to the data stored in said memory, and for operating said delivery means in accordance

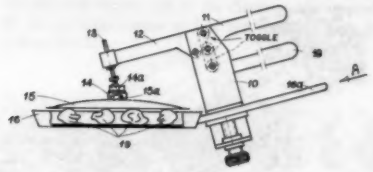
with said received signals and memory to deliver the selected volume of heated water to the pod.

4,484,516

CLAMP FOR PRESSING FOOD IN PAN DURING COOKING

Lev Bimman, Skogveien 117, 1320 Stabekk, Norway

Filed Jul. 29, 1982, Ser. No. 403,146
Int. Cl.³ A47J 37/10
U.S. Cl. 99—349 **1 Claim**



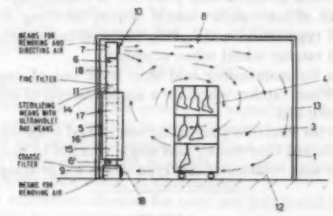
1. A device for cooking various food items under pressure, comprising in combination, a pan, a removable cover fitting into said pan on top of food placed therein, and a toggle link clamp lever mechanism having a pressure handle and having two toggle positions attained by corresponding movement of said pressure handle, said toggle mechanism being coupled between said cover and said pan for moving the cover in respective positions clamped on top of food in the pan and raised from the food in the pan in response to movement of said pressure handle to the two toggle positions, adjustable pressure level means coupled between the toggle mechanism and said cover for adjusting pressure on said food exerted in the toggle position clamped on top of said food.

4,484,517

UNIT FOR THE STORAGE AND AGING OF MEAT AND SAUSAGES

Emmo Amann, Hohenems, Austria, assignor to Gottfried Amann & Sohn Gesellschaft mbH & Co., Hohenems, Austria

Filed Mar. 4, 1982, Ser. No. 354,625
Claims priority, application Austria, Mar. 16, 1981, 1191/81
Int. Cl.³ A23B 4/00
U.S. Cl. 99—474 **4 Claims**



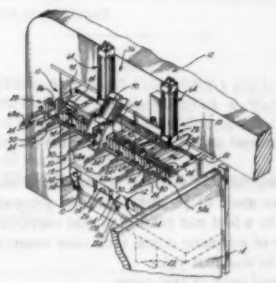
1. A storage and aging unit such as for meat and sausages including means forming an enclosed storage space, an enclosed air conditioning unit separate from and in flow communication with said storage space for circulating air in a closed cycle through said enclosed storage space, means for removing air from the storage space and directing the air to said air conditioning unit, means for receiving air from said air conditioning unit and directing the air back into said storage space, and means for sterilizing the air circulated within said storage space, wherein the improvement comprises that said sterilizing means includes a sterilizing unit located in the path of flow of the air circulating through said storage space as it passes between said means for removing air from the storage space and said means for receiving air from said air conditioning unit and directing air into said storage space, said means for removing air and said means for receiving air arranged in spaced relation so that the air flows in a closed cycle through said enclosed storage space and air conditioning unit, and said sterilizing unit comprises a coarse filter, a sterilizing stage using ultraviolet rays, and a fine filter, said air conditioning unit includes a heating unit and a humidifying unit located between said heating unit and said means for directing air into said storage space, said sterilizing stage located between said heating unit and said humidifying unit.

4,484,518

TYING DEVICE

Howard W. Jaenson, Covina, Calif., assignor to Jenglo Engineering, Inc., Azusa, Calif.

Filed Dec. 5, 1983, Ser. No. 558,206
Int. Cl.³ B65B 13/24
U.S. Cl. 100—4 **29 Claims**



1. A tying device for mounting on a baling press for tying a wire having preformed interlocking ends around a bale formed in the press, the tying device comprising:

(a) a first wire bend assembly pivotally mounted on one side of the baling press for holding and bending the first preformed interlocking end of a wire downwardly around one side of the bale as the assembly pivots from its fully raised to its fully lowered position;

(b) a second wire bend assembly pivotally mounted on the opposite side of the baling press for holding and bending the second preformed interlocking end of the wire downwardly around the opposite side of the bale as the assembly pivots from its fully raised to its fully lowered position; and

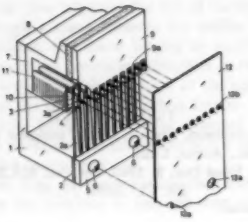
(c) a wire closer beneath such a bale comprising an elongated, open-ended cavity extending across the width of the closer, the first preformed interlocking end of the wire being inserted into the first open end of the cavity by the first wire bend assembly as the first assembly is pivoted downwardly, and the second interlocking end of the wire being inserted into the second open end of the cavity by the second wire bend assembly as the second assembly is pivoted downwardly, the wire closer additionally comprising means in which the first interlocking end of the wire is held by the first wire bend assembly as the second interlocking end of the wire is moved by the second wire bend assembly into interlocking engagement with the first end.

4,484,519

STYLUS DRIVING APPARATUS FOR PRINTERS

Toshio Kurihara; Makoto Yasunaga, and Masao Kunita, all of Tokorozawa, Japan, assignors to Citizen Watch Co. Ltd., Tokyo, Japan

Filed Aug. 5, 1982, Ser. No. 405,313
Claims priority, application Japan, Aug. 11, 1981, 56-125475; Nov. 10, 1981, 56-180160
Int. Cl.³ B41J 3/12, 9/38
U.S. Cl. 101—93.05 4 Claims



1. An improved stylus driving apparatus for printers comprising:

a supporting member made of non-magnetic material;

a first yoke made of magnetic material secured at one end thereof to a first end portion of said supporting member;

a plurality of magnetic cores, each core secured at one end thereof to said first yoke;

a coil around each of said cores;

a permanent magnet disposed adjacent to the other end of said first yoke;

a plurality of leaf springs of magnetic material secured to another end portion of said supporting member at a base portion thereof, each of said leaf springs extending in a first direction toward said core and each said leaf spring having a rear surface of an end-most portion thereof positioned adjacent to another end of a corresponding one of said cores;

an armature of magnetic material secured to the front surface of said end-most portion of each leaf spring at a position in alignment with said rear surface and said corresponding core;

a stylus secured to each of said armatures;

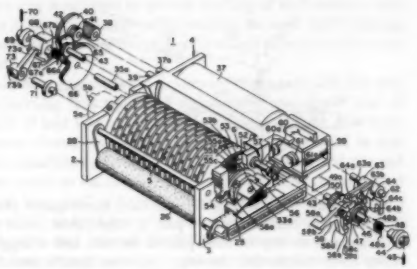
a second yoke of magnetic material secured at one end thereof to said permanent magnet at a side of said magnet opposite said first yoke, said second yoke extending in a direction opposite to said first direction of said leaf springs and the other end portion of said second yoke being adjacent to each of said armatures, said other end portion of said second yoke having a wall portion surrounding at least a part of each said armature in a position of said armature wherein said armature is attracted to said other end of said core by magnetomotive force of said permanent magnet for forming a magnetic circuit passing through said first yoke, through said core, between said rear and front surfaces of said end-most portion of said leaf spring where said armature is secured, through said armature and said second yoke.

4,484,520

COMPACT PRINTER WITH CLUTCH

Takeshi Kimura; Satoshi Watanabe, both of Chichibu; Hirofumi Hirano, Arakawa, and Setsuo Sasaki, Chichibu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 285,399, Jul. 20, 1981, abandoned. This application Jul. 20, 1983, Ser. No. 515,664
Claims priority, application Japan, Jul. 31, 1980, 55-104404
Int. Cl.³ B41J 1/08
U.S. Cl. 101—99 2 Claims



1. A compact printer, comprising:

a type wheel having a peripheral surface with a plurality of type rows arranged thereon, each of said type rows being arranged at a first pitch;

motor means for for generating a rotational force to rotate said type wheel;

spring clutch means for selectably transmitting the rotational force of said motor means to said type wheel, said spring clutch means including a ratchet wheel having teeth arranged at a second pitch, wherein said spring clutch means stops transmission of the rotational force of said motor means to said type wheel when rotation of said ratchet wheel is restrained;

a rotationally mounted stop lever having a pawl and being urged by a spring into engagement with the teeth of said ratchet wheel thereby to restrain rotation of said ratchet wheel;

a plurality of solenoid levers having portions in operative relationship with said pawl and which are simultaneously operable to rotate said pawl out of engagement with the teeth of said ratchet wheel thereby enabling rotation of said type wheel and having portions cooperable to stop said ratchet wheel when actuated;

means for maintaining said stop lever out of engagement with said ratchet wheel for a single rotation of said ratchet wheel; and

means for selectively actuating one of said solenoid levers at a selected time during said single rotation to momentarily stop said rotation of said type wheel for printing.

4,484,521

DATE BAND INDEXING MECHANISM FOR ENDORSER

Richard Frystak, Park Ridge, and Donald R. Friedlund, Round Lake Beach, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Feb. 28, 1983, Ser. No. 470,831
Int. Cl.³ B41J 1/60
U.S. Cl. 101—111 15 Claims

1. In a printing device having a plurality of individually stackable modular endorsing segments stacked adjacent each other and secured by securing means in a locked relationship relative to each other, an improved mechanism for incrementing the printing characters on each endorsing segment comprising:

an endless character belt mounted on each said segment and having the printing characters to be incremented on its

outer circumferential surface and inner gear teeth on its inner circumferential surface,

the inner gear teeth separated by grooves recessed in the belt,

the characters on the belt located between adjacent grooves,

sprocket means mounted on each segment and having external teeth which engage the inner gear teeth of the character belt,

drive means to rotate the sprocket means,

a first detent block on each segment spaced apart from the sprocket means,

a second detent block on each segment spaced apart from the sprocket means and on the diametrically opposite side of the sprocket means and of the segment from the first detent block,

the detent blocks having a top surface and two side surfaces, the top and side surfaces intersecting at two corners, the length of the top surface being defined by the distance between the two corners, the grooves in the belt separated by a distance equal to the length of the top surface, with the grooves causing the belt to seat on the corners,

the character belt encircling and in contact with the first and the second detent blocks and the sprocket means,

whereby rotation of the sprocket means by the drive means causes the character belt to rotate about the sprocket means and detent block thereby presenting different printing characters at the detent block, each sprocket means adapted to be rotated independently of the sprocket means on adjacent endorsing segments.

4,484,522

SYSTEM FOR REDUCING SETTING-UP TIME IN PRINTING MACHINES HAVING REGISTER ADJUSTMENT DEVICES

Claus Simeth, Offenbach am Main, Fed. Rep. of Germany, assignor to M.A.N. Roland Druckmaschinen AG, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 410,564, Aug. 23, 1982, abandoned. This application Mar. 4, 1983, Ser. No. 472,044

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1981, 31367038

Int. Cl.³ B41F *13/24*

U.S. Cl. 101—248 **20 Claims**

1. An automatic control system for adjusting at least the axial and peripheral register in a printing machine in response to the axial and peripheral position of at least one register mark on at least one printing plate mounted on a plate cylinder, the control system comprising, in combination,

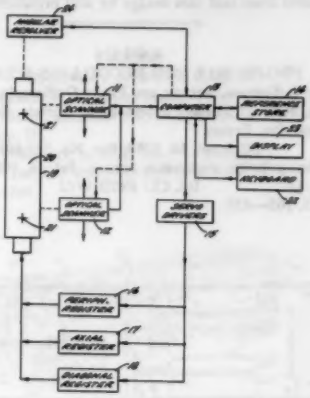
register adjustment devices for axial and peripheral register operable by computer control,

a computer for performing numerical calculations and operating the register adjustment devices,

scanning means for sensing the axial and peripheral positions of the register mark on the printing plate, the scanning means being mounted for traversing, generally axial movement with respect to the machine frame,

computer operable means for driving the scanning means to a desired axial coordinate,

the computer being programmed to provide means for receiving and storing, in memory, predetermined reference coordinates of the register mark, driving the scanning means to approximately the predetermined axial coordinate of the register mark, obtaining axial and peripheral coordinates of the register mark from the output of the scanning means, comparing the axial and peripheral coordinates of the register mark to predetermined reference coordinates stored in the computer's memory to determine axial and peripheral register errors, and controlling



the register adjustment devices so that in response to the determined register errors, the axial and peripheral register errors are reduced.

4,484,523

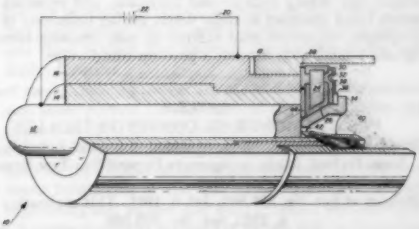
DETONATOR, SOLID STATE TYPE I FILM BRIDGE

Rex L. Smith; D. Philip Ankeney; Patrick A. Yates; Henry F. Blazek, and Steven E. Fowler, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 28, 1983, Ser. No. 479,424

Int. Cl.³ F42C *19/12*

U.S. Cl. 102—202.5 **7 Claims**



1. A solid state detonator comprising:

a header having first and second electrical conductors and an insulating layer, said insulating layer separating said conductors;

a chip in electrical contact with said first electrical conductor of said header;

a film bridge defining an electrical path area electrically connected to said chip;

at least one electrical conducting pad electrically connected in series between said film bridge and said second electrical conductor of said header;

at least one insulating layer electrically shielding said chip, said insulating layer interposed between said film bridge and said chip such that no more than a negligible fraction of heat caused by a firing pulse will be conducted away via said chip before ignition occurs, yet the lower energy density levels of inadvertent or stray currents will conduct heat away through said insulating layer and into said chip after a few microseconds of application;

a power source connected to said first and second electrical conductors of said header;

a protecting layer covering said film bridge; and

primary explosive contacting said protective layer and separated from said film bridge by said protective layer.

4,484,524

PROJECTILE FOR RECOILLESS WEAPON

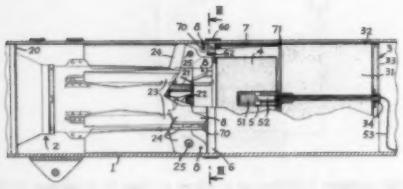
Marcel L. Dawant, Antony, and Pierre Guillemain, La Queue en Brie, both of France, assignors to Societe Europeenne de Propulsion, France

Filed Jul. 14, 1983, Ser. No. 513,681

Claims priority, application France, Jul. 16, 1982, 82 12503

Int. Cl.³ F42B 9/12

U.S. Cl. 102—437 **9 Claims**



1. A round of ammunition for a recoilless projectile launcher of the type having a launch tube which is open at both ends, said round comprising a projectile having forward and rear ends, a propulsive charge behind said rear end of said projectile, a countermass behind said propulsive charge, and linking means connecting said countermass to said projectile, at least when said round is loaded into said launch tube, said linking means comprising a plurality of small rigid linking rods of low mass and a high ballistic coefficient, each of said linking rods having first and second ends, means fixing said first ends of said linking rods to said countermass in a peripheral region thereof, and retaining elements on said rear end portion of said projectile interacting with said second ends of said linking rods to attach said linking rods to said projectile, said retaining elements being designed to shear when, during launching of said projectile, the tensile load exerted on said retaining elements by said linking rods exceeds a predetermined value.

4,484,525

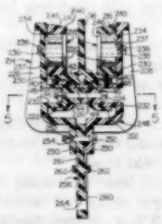
PLASTIC MONORAIL CONVEYOR TROLLEY

David J. Forshee, Hilton Head Island, S.C., and James S. Salloum, Oxford, Mich., assignors to Formall Syn-Trac Systems, Inc., Madison Heights, Mich.

Division of Ser. No. 395,509, Jul. 6, 1981,. This application Jul. 6, 1982, Ser. No. 395,508

Int. Cl.³ B61B 3/00

U.S. Cl. 104—95 **17 Claims**



1. In a trolley assembly for operation on an inverted T-bar monorail rack comprising longitudinally abutting sections having a longitudinally extending upstanding stem and a laterally outwardly extending flange from each side of said stem, said flanges lying substantially in a plane transversely of said stem, the upper surfaces of said flanges being inclined slightly downwardly from said stem, each said track section having a substantially medial longitudinally extending web portion between said flanges therebelow, each said flange having an upwardly laterally outwardly curved underside surface portion adjacent and at each side of said web portion, blending into a substantially planar underside surface portion extending laterally outwardly to the distal edge of said flange, said trolley assembly comprising

a pair of complementary, opposedly facing, plastic easily detachably conjoined trolley arms having an upper portion, an intermediate portion and a lower end portion,

a plastic trolley upper wheel freely rotatable on each said trolley arm and in rolling bearing contact upon said flange upper surfaces,

a plastic stub axle for each said trolley upper wheel easily removably attached to and adjacent the inward face of the upper portion of each said trolley arm,

a pair of plastic trolley lower wheels easily removably and rotatably mounted on each said trolley arm in parallel spaced apart relationship,

abutting bearing portions for each said pair of lower wheels projecting inwardly from the intermediate portion of each said trolley arm,

means detachably connecting said trolley arms together at said abutting bearing portions,

said bearing portions for each said pair of trolley lower wheels being aligned axially and in abutting inner end-to-end relationship,

means intermediate the ends of said bearing portions limiting laterally outward travel of said trolley wheels,

said upwardly laterally outwardly curved underside surface portions of said flanges limiting laterally inward travel of said lower wheels,

said two pairs of lower wheels rotatable in a common plane below and substantially parallel with the plane of said upper wheels,

said lower wheels being shaped to cooperatively function with said track underside surface portions,

and a pendant member removably secured to the conjoined lower end portions of said trolley arms.

4,484,526

SWITCHING MEANS FOR GUIDEWAY TRACKS

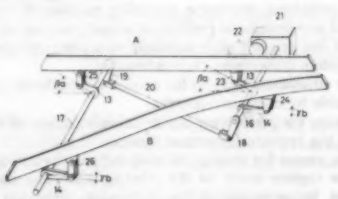
Yukio Uozumi, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed May 13, 1982, Ser. No. 377,855

Claims priority, application Japan, May 13, 1981, 56-72717

Int. Cl.³ E01B 7/08

U.S. Cl. 104—131 **9 Claims**



1. A switching structure for a guideway track including running way means adapted for supporting running wheels of a guideway vehicle and guide rail means adapted for guiding guide wheels of said vehicle, said switching structure including a first and second moveable guide rail means, crank means for alternately raising and lowering the first and second movable guide rail means for switching running path of the vehicle, driving means for driving the crank means, said crank means having a first and second crankarms having a phase difference

smaller that 180°, said first movable guide rail means being connected with said first crankarm at a first radius position so that the first movable guide rail means is movable substantially vertically for a first stroke when the first crankarm is rotated in an angular range which extends from a horizontal line, upwardly by a first upward angle and downwardly by a first downward angle which is smaller than said first upward angle, said second movable guide rail means being connected with said second crankarm at a second radius position so that the second movable guide rail means is movable substantially vertically for a second stroke when the second crankarm is rotated, in an angular range which extends from a horizontal line, upwardly by a second upward angle and downwardly by a second downward angle which is smaller than said second upward angle, said first and second strokes satisfying the following relationship,

$$ha = ra(\sin \beta a + \sin \gamma a)$$

$$hb = rb(\sin \beta b + \sin \gamma b)$$

where:

ha and hb are the first and second strokes, respectively;

ra and rb are the first and second radius, respectively;

βa and βb are the first and second upward angles; and

γa and γb are the first and second downward angles, said first and second movable guide rail means being shifted during their downward strokes horizontally by distances a and b, respectively, wherein the following relationships are established:

$$\delta a = ra(\cos \beta a - \cos \gamma a)$$

$$\delta b = rb(\cos \beta b - \cos \gamma b).$$

whereby said first and second movable guide rail means are shifted laterly outward when they are moved downward.

4,484,527

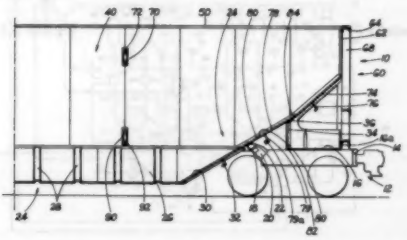
CONVERTIBLE RAILWAY HOPPER CAR

James C. O'Hara, St. Louis, Mo., assignor to ACF Industries, Inc., New York, N.Y.

Filed Jul. 23, 1982, Ser. No. 401,190

Int. Cl.³ B61F *1/10, 1/14;* B61D *7/00*

U.S. Cl. 105—247 **10 Claims**



1. A railway hopper car comprising: a pair of longitudinally aligned railway car stub sills; a pair of transversely extending shear plates, each shear plate attached to a respective said stub sill; each said shear plate extending inboard to generally the midportion of its respective stub sill; gusset means extending inwardly from end portions of each said stub sill; at least one pair of transversely extending, longitudinally spaced locating plates, each locating plate attached to a respective said gusset means a hopper bottom attached at each of its ends to said longitudinally spaced locating plates; hopper car sides including side sills and vertically extending side sheets located on the respective shear plates and integrally connected to said shear plates; hopper car ends including end slope sheets connected to each of said locating plates and vertical beam means extending respectively between said end slope sheets and said stub sills to react the turning moment applied to said stub sills by coupler impact and squeeze loads.

4,484,528

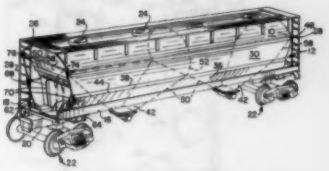
RAILWAY HOPPER CAR

Arthur I. Anderson, St. Paul, and Louis J. Harvatin, Minneapolis, both of Minn., assignors to North American Car Corporation, Chicago, Ill.

Filed Oct. 9, 1981, Ser. No. 310,056

Int. Cl.³ B61D *5/00, 7/00, 17/08*

U.S. Cl. 105—248 **24 Claims**



1. A covered railway hopper car comprising:

side walls on opposite sides of the car and having a top and a bottom, said side walls each including,

a first arcuate side sheet portion extending longitudinally of the car and having upper and lower boundaries also extending longitudinally of the car,

a second side sheet portion distinct from said first arcuate side sheet portion and extending continuously and longitudinally of the car, said second side sheet portion being substantially flatter in cross section than said first arcuate side sheet portion and having upper and lower boundaries also extending longitudinally of the car, said second side sheet portion being positioned beneath and secured adjacent its upper boundary to said first arcuate side sheet portion adjacent the lower boundary of the first arcuate side sheet portion on the same side of the car, said second side sheet portion also defining the bottom of the side walls of the car,

roof means covering the car and secured to said first arcuate side sheet portion on each side of the car adjacent the upper boundary thereof, and

reinforcing means extending continuously and longitudinally on the exterior of the car and between the upper and lower boundaries of said second side sheet portion and reinforcing said second side sheet portion over its length.

19. A covered railway hopper car having side walls, and an end slope sheet having upper and lower ends, a vertical end wall secured to the upper end of the end slope sheet, a roof, side sills, a substantially horizontal generally planar shear plate at an end of the car extending between the side sills, a center plate for mounting a rail car truck at the end of the car, the center plate being secured to the shear plate beneath the end slope sheet and in a vertical plane which intersects the end slope sheet at a location substantially intermediate the upper end of the end slope sheet and the location that the plane of the horizontal shear plate intersects the end slope sheet, the improvement therein comprising:

first vertical support means extending vertically between and secured to said shear plate and said end slope sheet in said vertical plane, and

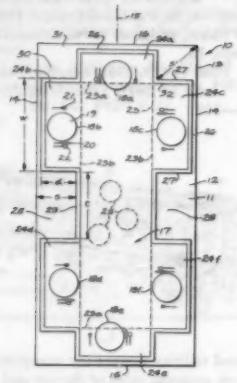
second vertical support means extending upwardly adjacent said vertical plane between said end slope sheet and said roof, whereby forces are transmitted subsantially in said vertical plane directly to said roof at a location spaced from said vertical end wall.

4,484,529

MULTIPLE PLACE SETTING TABLECLOTH ARRANGEMENT

Patricia L. Caldares, 8429 Vicara Dr., Alta Loma, Calif. 91701

Filed Feb. 25, 1983, Ser. No. 469,919
Int. Cl.³ A47B *13/08*
U.S. Cl. 108—90 **6 Claims**



1. A tablecloth comprising:

a main central portion of the cloth adapted to cover a central part of the top of a dining table and on which serving pieces may be placed; and

individual dining portions of the tablecloth connected to said central portion and projecting laterally therefrom at spaced locations to cover corresponding portions of the table top at different sides of the table;

said individual dining portions being dimensioned to each receive an individual place setting including a plate, knife, fork and spoon;

said tablecloth having cutaway areas between successive ones of said individual dining portions dimensioned to leave substantial areas of the top of the table exposed between said individual dining portions and said place settings thereon.

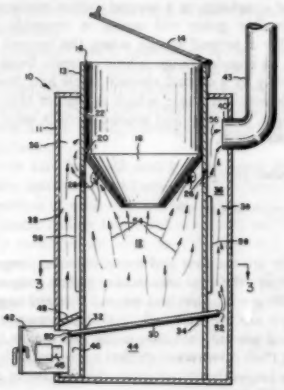
4,484,530

DUAL STAGE COMBUSTION FURNACE

Robert G. Goetzman, 519 Cayuga Dr., Niagara Falls, N.Y. 14304

Filed Jun. 6, 1983, Ser. No. 501,738
Int. Cl.³ F23B *1/12*
U.S. Cl. 110—296 **5 Claims**

1. A dual stage solid fuel furnace which comprises an outer drum, an inner drum of diameter smaller than said outer drum, said drums having upper and lower ends, said inner drum being disposed within said outer drum to define an annular air space between said inner and outer drums extending between the upper and lower ends of said outer drum, the lower ends of said inner and outer drums being co-terminous and closed, the upper end of said outer drums being closed, a door in the upper end of said inner drum for admission of fuel, said door closing said upper end of said inner drum when closed, a grate comprising a plurality of hollow tubes disposed across said inner drum, said tubes having inlets and outlets at opposite ends thereof, said tubes being disposed adjacent to the lower end of said inner drum and defining a lower space between the lower end of said inner drum and said tubes, an opening in said outer drum into said lower space, the inlet ends of said tubes receiving air from said lower space adjacent the lower end of said inner drum and being in communication with said opening in said outer drum, the outlet ends of said tubes extending into said annular airspace above said lower space, said tubes providing a means for superheating air for secondary combustion, a plurality of apertures in said inner drum disposed in a ring intermediate said upper and lower ends of said inner drum, means for forming a bed of said fuel admitted through said door in a region of said inner drum from said grate to a level below said apertures to define a primary combustion chamber in said inner drum, a region in said annular airspace adjacent to



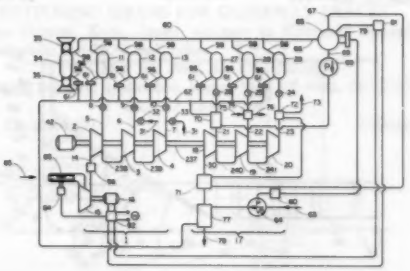
said apertures defining a secondary combustion chamber wherein air superheated in passing between the inlet and outlet ends of said tubes produces combustion of unburned volatile gases from said primary combustion chamber, and an exhaust opening in said outer drum above said secondary combustion chamber near the upper end of said outer drum.

4,484,531

CYCLIC VELOX BOILER

Joseph C. Firey, P.O. Box 15514, Seattle, Wash. 98115

Division of Ser. No. 546,093, Oct. 27, 1983, Pat. No. 4,455,837.
This application Feb. 13, 1984, Ser. No. 579,562
Int. Cl.³ F23B *7/00*
U.S. Cl. 110—342 **2 Claims**



1. A process for burning at least two separate char fuel masses, each of which is contained within a separate pressure vessel container whose internal volume exceeds by a dead volume that of the char fuel mass contained therein, comprising the steps of:

preheating each of said at least two char fuel masses to that temperature at which said char reacts rapidly with oxygen gas in adjacent compressed reactant gases;

compressing a reactant gas containing appreciable oxygen gas in part into the pores of at least one of said char fuel masses and in remaining part into said dead volume adjacent to and in contact with each of said char fuel masses undergoing compression;

while concurrently expanding reacted gases out of the pores of at least one other of said char fuel masses and also concurrently out of those dead volumes adjacent to and in contact with said other char fuel masses undergoing expansion;

alternating said compression process with said expansion process for each char fuel mass and its adjacent contacting dead volume;

repeating said compression process alternated with said expansion process several times for each of said at least two char fuel masses and their adjacent contacting dead volumes;

continuing said compression process continuously to at least one char fuel mass and its adjacent contacting dead volume at a time;

continuing said expansion process continuously to at least one char fuel mass and its adjacent contacting dead volume at a time;

removing essentially all reacted gases, which expand outside the pores of said char fuel mass and react with reactant gases from said adjacent contacting dead volume, from continued contact with said char fuel mass and adjacent contacting dead volume, during each expansion process on each char fuel mass;

supplying at least one fresh reactant gas for each compression process on each char fuel mass and adjacent contacting dead volume, said fresh reactant gases comprising a gas containing appreciable oxygen gas.

4,484,532

APPARATUS FOR BLIND STITCHING AN S-SHAPED HEM

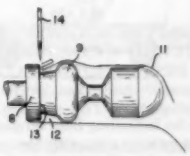
Wolfgang Norz, Schwieberdingen, Fed. Rep. of Germany, assignor to Union Special G.m.b.H, Stuttgart, Fed. Rep. of Germany

Filed May 12, 1983, Ser. No. 494,144

Claims priority, application Fed. Rep. of Germany, May 15, 1982, 3218494

Int. Cl.³ D05B *23/00, 27/10*

U.S. Cl. 112—2 **14 Claims**



1. A sewing apparatus capable of securing an S-shaped fold in the advancing edge of a tubular workpiece with an overedge stitch, said sewing apparatus comprising:

an overedge sewing machine having stitch forming instrumentalities;

a hemmer capable of forming an S-shaped fold in the edge of a workpiece; and

a tensioning device for arranging one end of the workpiece in a tubular configuration, said tensioning device includes at least two rollers one of which is designed as a guide roller having a channel adapted to receive and guide the sewn workpiece edge.

4,484,533

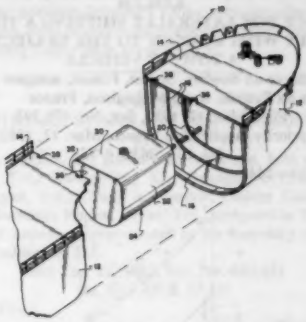
METHOD AND APPARATUS FOR TRANSPORTING POTABLE WATER AND OTHER FLUIDS

George J. David, 3076 Fairmount Blvd., Cleveland Heights, Ohio 44118

Filed Oct. 13, 1981, Ser. No. 310,457

Int. Cl.³ B63B *25/08*

U.S. Cl. 114—74 R **7 Claims**



1. A method of transporting first and second distinct quantities of liquid in a ship having a hull compartment therein of substantial size, said compartment having portions thereof defining an unobstructed volumetric area of generally unimpeded height, length and width parameters, and the remainder thereof defining an obstructed area including diverse spaced hull bracing, as plates, beams and related structural members of said ship and thereby having essentially no unimpeded volumetric dimension parameters of any substantial size, comprising the steps of:

(a) providing bag-like, highly flexible and collapsible, nonpermeable liner means for defining a first liquid-fillable chamber within said unobstructed portions of the ship, and for cooperating with the walls of the hull compartment to define a second liquid-fillable chamber within such at least partially obstructed portions of the compartment as are not occupied by the liner means and the said first chamber;

(b) loading a first quantity of liquid into the liner means defining the first chamber, and loading a second quantity of liquid into the second chamber, with these loadings being conducted in a manner such that the first and second liquid quantities substantially fill the hull compartment when the loadings have been completed, whereby the ship will not become unstable due to shifting of the liquids;

(c) regulating said loadings so that flows of said first and second liquids maintain substantially equal levels of liquids within the first and second chambers on the inside and outside of said liner means thereby to avoid substantially unbalanced liquid pressure stresses on said flexible and collapsible liner means;

(d) at a time after the first and second quantities of liquid have been loaded, moving the ship to transport the first and second liquid quantities with the liner means maintaining segregation between the first and second liquid quantities;

(e) the said step of providing the ship with said flexible and collapsible liner means including the step of providing the liner means with at least portions thereof which are sufficiently flexible to enable the liner means to collapse within the compartment to occupy a minimum of space therein when it is desired to maximally fill the second chamber with liquid; and,

(f) the said step of loading the first and second quantities being implemented at least in part, by providing the said flexible and collapsible liner means with flexible portions which deflect as need be during filling such that, as the

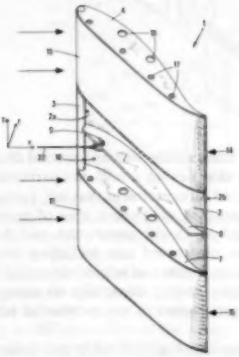
first and second liquid quantities are loaded, the configuration of the liner means along its walls freely changes as may be required in response to forces acting on the first and second liquid quantities to assist in maintaining the substantially constant liquid levels in the first and second chambers to prevent unwanted liner means stress.

4,484,534

DEVICE FOR LATERALLY SHIFTING A TOWED ASSEMBLY WITH RESPECT TO THE TRAJECTORY OF A TOWING VEHICLE

Benoit Thillaye du Boullay, Sevres, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Mar. 17, 1983, Ser. No. 476,293
Claims priority, application France, Mar. 17, 1982, 82 04667
Int. Cl.³ B63G *8/42*
U.S. Cl. 114—244 **6 Claims**



1. A device for laterally shifting an assembly towed in a fluid through a towing cable by a vehicle, with respect to the trajectory thereof, comprising a profiled wing connected to said towed assembly, whose leading edge is rounded and whose forward side bearing on operation, on the fluid and the opposite rear side have convex portions, said device being connected to the towed assembly through a single cable and comprising two hollow caissons defined by the walls of the wing, said caissons being respectively located at the two opposite ends thereof, and being separated by a thinner central portion concave on the forward side of the wing, and said central portion being oriented perpendicularly to the leading edge, the device also comprising a profiled central rib, in the middle of said concave central portion, extending from the leading edge to the opposite edge, the height of the central rib at said opposite edge being greater, at said edge, than the thickness of the wing.

4,484,535

HANDBELL CLAPPER

Gamon B. Hayward, Escondido, Calif., assignor to Maas-Rowe Carillons, Inc., Escondido, Calif.

Filed Mar. 21, 1983, Ser. No. 477,232
Int. Cl.³ G10K *1/071, 1/10, 1/36*; G10D *13/08*
U.S. Cl. 116—171 **4 Claims**

1. In a handbell having a bell body and a handle attached to the bell body for imparting swinging movement thereto, the combination therewith of:

(a) a clapper bar;

(b) means supporting the clapper bar on said bell body for angular movement about a swing axis;

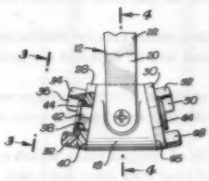
(c) a clapper body suspended at the end of said clapper bar, said clapper body having opposite end surfaces;

(d) a pair of turrets;

(e) a plurality of strike heads on each turret, and having different strike characteristics;

(f) means mounting said turrets on said end surfaces of said clapper body respectively for angular movement selectively to position one of the strike heads of the turret into operative position, thereby independently to determine both the forward and back strike characteristics of the handbell;

(g) each of said mounting means comprising a non-circular



central projection extending from said end surface of said clapper body, the companion turret having a non-circular aperture fitting the projection in any one of a number of selected relative angular orientations;

(h) said projection and said aperture having a corresponding regular polygonal configuration;

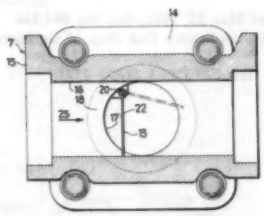
(i) said turret, at the region of said aperture being resilient whereby stable positions of said turret are determined corresponding to operative positioning of one of the strike heads of the corresponding turret.

4,484,536

APPARATUS FOR INDICATING FLUID FLOW

Jean Henocque, Ste Adresse, and Henri Besnard, Fecamp, both of France, assignors to Etablissements Trouvay and Cauvin S.A., Le Havre, France

Filed Mar. 5, 1982, Ser. No. 355,084
Int. Cl.³ G01F *15/00*
U.S. Cl. 116—275 **9 Claims**



5. Apparatus for indicating fluid flow in a generally horizontal duct and comprising a housing for connection in said duct and a flap mounted in said housing for pivoting in response to said flow of liquid, characterized in that an upper part of said flap defines an opening in an upper part of said housing for flow of air from said duct in a return direction through said opening simultaneously with forward liquid flow through a lower part of said housing, the housing comprising a cylindrical sleeve with a cylindrical internal surface for mounting in the duct in continuation of the duct and in continuation of a cylindrical internal surface intersecting with the cylindrical sleeve and its cylindrical internal surface in perpendicular relation thereto and two circular flat end glasses sealing opposite ends of the second cylinder and wherein the flap is mounted in side bearings on opposite sides of the second cylinder near the end glasses and a spindle mounted between the side bearings and extending in an axial direction through the

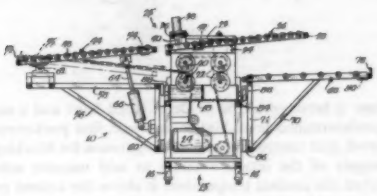
second cylinder and wherein the flap is mounted on the spindle for rotation about the spindle within the second cylinder and wherein the flap extends generally perpendicular to the cylindrical sleeve.

4,484,537

GRAVITY FEED AND RETURN SYSTEM FOR SHEET LUBRICATORS

Robert Kerber, Park Ridge, Ill., assignor to Briskin Manufacturing Company, Chicago, Ill.

Filed Jan. 16, 1984, Ser. No. 570,820
Int. Cl.³ B05C *1/02, 13/00*
U.S. Cl. 118—686 **13 Claims**



1. A gravity conveyor system for feeding metal sheets from a worker station to a sheet lubricator having driven rollers and returning the lubricated sheets to the same worker station comprising:

a first conveyor section mounted on the sheet lubricator above the driven rollers thereof,

said first conveyor section being inclined downwardly from the discharge end in the direction of the entrance end of the sheet lubricator;

a second conveyor section mounted from the entrance end of the sheet lubricator and pivotable between a first position in planar alignment with said first conveyor section and a second position inclined downwardly toward the driven rollers of the sheet lubricator for delivering a sheet thereinto;

means responsive to a sheet passing onto and from said second conveyor section for pivoting said second conveyor section between said first and second positions; and

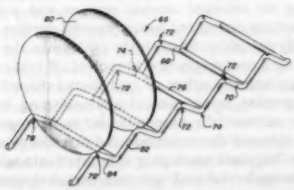
a third conveyor section mounted from the discharge end of the sheet lubricator in substantial vertical alignment with said first conveyor section for receiving a sheet exiting from the sheet lubricator.

4,484,538

APPARATUS FOR PROVIDING DEPLETION-FREE UNIFORM THICKNESS CVD THIN-FILM ON SEMICONDUCTOR WAFERS

Robert F. Sarkozy, Westford, and Morris Simson, Framingham, both of Mass., assignors to BTU Engineering Corporation, North Billerica, Mass.

Filed Nov. 16, 1983, Ser. No. 552,455
Int. Cl.³ B05C *13/02*
U.S. Cl. 118—729 **12 Claims**



8. Apparatus for use with a CVD diffusion furnace for providing depletion-free uniform thickness thin-film on semiconductor wafers, comprising:

a boat for removably retaining a plurality of semiconductor wafers, with the plane of each of the wafers coincident with the vertical plane and longitudinally spaced apart in parallel orientation, said boat including an elongated structural member having a plurality of ridge portions selectively spaced apart longitudinally by respective intermediate portions defining a valley between adjacent ridge portions, each of said ridge portions having a transversely extending wafer edge receiving slot.

4,484,539

OVIPOSITIONAL STIMULANT FOR TRICHOGRAMMA SPP.

William C. Nettles, Jr.; Richard K. Morrison, both of College Station, Tex.; Zhong-Neng Xie, Guangzhou, China; Debra Ball, Bryan, Tex.; Cyndy A. Shenkir, College Station, Tex., and S. Bradleigh Vinson, Bryan, Tex., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 15, 1983, Ser. No. 532,431
Int. Cl.³ A01K *67/00*
U.S. Cl. 119—1 **3 Claims**

1. A process for stimulating oviposition in *Trichogramma pretiosum* insects comprising:

(a) fabricating an artificial wax egg containing salt solution of KCl and $MgSO_4$, said solution of sufficient concentration to stimulate the insect;

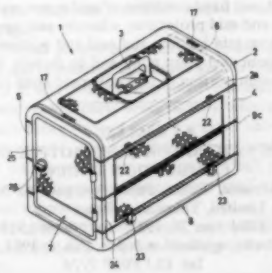
(b) allowing the insects to come into contact with the artificial wax eggs for sufficient time and at sufficient temperature to allow the insects to oviposit their eggs into the solution as a result of solution stimulus.

4,484,540

COLLAPSIBLE, PORTABLE DOMESTIC PET CAGE

Yoshikazu Yamamoto, 1-1, 3-chome, Eganosho, Habikino, Osaka, Japan

Filed Feb. 1, 1984, Ser. No. 575,991
Claims priority, application Japan, Mar. 24, 1983, 58-43116
Int. Cl.³ A01K *1/02*
U.S. Cl. 119—19 **6 Claims**



1. A collapsible animal cage, comprising

a top portion having four vertical walls extending downward perpendicularly from a ceiling;

a bottom portion having four vertical walls extending upward perpendicularly from a floor, said vertical walls of said bottom portion and of said top portions being of suitable dimensions and disposed to fit against each other in a collapsed state of said cage, wherein said top vertical walls and said bottom vertical walls have at corresponding edges thereof, locking means, said locking means comprising a recess and a resilient holder means, whereby in said collapsed state said top portion and said bottom

portion are locked together by said resilient holder means holding said recess;

two side portions being of suitable dimensions and disposed to fit within said top portion and said bottom portion in said collapsed state, and positioned opposite each other in an erected state of said cage, each of said side portions comprising an upper part and a lower part and a flexible interconnecting part connecting said upper part and said lower part,

means for lockedly holding said side portions substantially parallel to said vertical walls of said top portion and said bottom portion in said erect state, said means for lockedly holding comprising for both said top portion and said bottom portion and said upper part of said side portion and said lower part of said side portion, a projection in said vertical wall of said top or bottom portion and corresponding thereto a notched portion in said side portion and resilient means to hold said projection and notch connected together in said erect state, and a holding space in said top portion whereat said upper part of said side portion is disposed in said erect state,

whereby to cause a collapsed state of said cage, said interconnecting part of said side wall portion is pushed inward thereby breaking said connection between said notched part and said projection, and thereby enable said upper part and said lower part of said side portions to fit together next to each other within said top portion and said bottom portion;

two end portions being of suitable dimensions and disposed to fit within said top portion and said bottom portion in said collapsed state and disposed opposite to each other and perpendicular to said side portions in said erect state,

each of said end portions having a bottom section pivotally connected to said bottom portion whereby said end portion is disposed to lie flat in said bottom portion in said collapsed state and disposed to be perpendicular to said bottom portion in said erect state, one of said end portions being disposed higher than the other end portion so that said one end portion will lie on top of said other end portion in said collapsed state;

lock means comprising a lip of said top portion and a projection from said top portion, said end portion having an upper section, said upper section lockedly fixed between said lip and said projection in said erect state, thereby to hold said end portions in said vertical position in said erect state, and a hole in said top portion for insertion of a force to break said fixed condition of said upper section between said lip and said projection, whereby said upper section is freed from said holding and said end portion is caused to pivot about said pivot point and to thereby lie flat within said bottom portion in said collapsed state of said cage.

4,484,541

COOLING SYSTEM FOR AUTOMOTIVE INTERNAL COMBUSTION ENGINE

Junichi Yokoyama, Ebina, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 28, 1983, Ser. No. 461,918

Claims priority, application Japan, Feb. 4, 1982, 57-14419[U]

Int. Cl.³ F01P 7/16

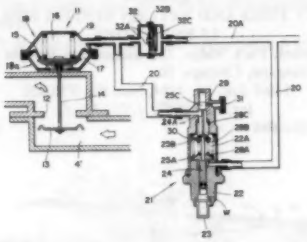
U.S. Cl. 123—41.1 **9 Claims**

1. A cooling system for a liquid cooled automotive internal combustion engine equipped with a radiator, comprising:

a valve member movably disposed in a coolant passage leading to the radiator and capable of restricting flow of coolant to the radiator;

a vacuum actuator for controlling operation of said valve member in response to intake vacuum supplied thereto, said vacuum actuator being constructed and arranged to control the operation of said valve member so that the degree of restricting the coolant flow to the radiator increases as said intake vacuum increases; and

a thermally responsive vacuum control valve fluidly connected to said vacuum actuator, for controlling supply of the intake vacuum to said vacuum actuator in response to the temperature of the coolant in the coolant passage upstream of said valve member, said control valve being constructed and arranged so as to supply the intake vacuum to said vacuum actuator when the coolant temperature is between a first predetermined level and a second predetermined level higher than said first predetermined level, said control valve including means for blocking the supply of the intake vacuum to said vacuum actuator when the coolant temperature is above the second predetermined level.



4,484,542

FOUR-VALVE CYLINDER HEAD OF A FOUR-STROKE ENGINE

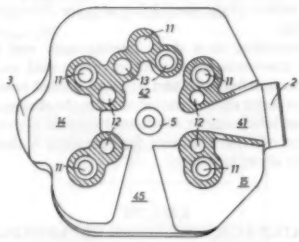
Michael Krauser, Germering, Fed. Rep. of Germany, assignor to Krauser KFZ-Zubehör Vertriebs-GmbH, Mering, Fed. Rep. of Germany

Filed Apr. 20, 1982, Ser. No. 370,121

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1981, 3116802

Int. Cl.³ F02P 1/06

U.S. Cl. 123—41.69 **3 Claims**



1. In a four-valve cylinder head of a four-stroke engine into which cooling air is introduced for cooling the cylinder head, comprising a head body receiving a spark plug; a combustion chamber in a lower part of said head body; an inlet at one side of said body and an outlet at an opposite side of said body; and a straight passage for cooling air passing therethrough and extended between the inlet side and the outlet side, said passage including an enlarged central portion and a funnel-shaped lateral portion connected to said central portion and extended outwardly therefrom towards the outlet side, the improvement comprising a suction portion branched off said central portion and being laterally offset of said funnel-shaped portion, said suction portion being conical and widening in an outward direction substantially perpendicular to said passage between the inlet side and the outlet side and extending outward from a level at which said spark plug is inserted into said body, cooling air being introduced into said funnel-shaped portion and sucked away from the cylinder head through said suction portion.

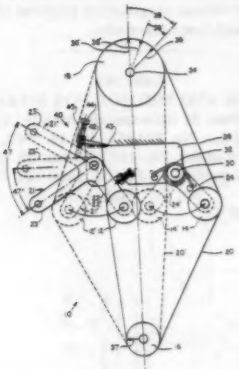
4,484,543
ADJUSTABLE NON-THROTTLING CONTROL APPARATUS FOR SPARK IGNITION INTERNAL COMBUSTION ENGINES

Joel W. Maxey, 8400 Country Club Dr. N., Sarasota, Fla. 33580

Continuation-in-part of Ser. No. 50,483, Jun. 20, 1979, Pat. No. 4,354,459. This application May 31, 1983, Ser. No. 499,344

Int. Cl.³ F01L *7/00*

U.S. Cl. 123—80 BA **2 Claims**



1. In a spark ignition, single or multi-cylinder internal combustion engine of the four stroke cycle or two stroke cycle type having cylinder intake means of the intake poppet valve type or sliding ports or reed type, respectively, and a fuel mixture feed of the carburetor or fuel injection type, an assembly for matching engine power output to engine load conditions, in the absence of throttling the fuel mixture or air feed of such engine, wherein the improvement comprises

a phase shift assembly comprising first, second, third, and fourth pulleys,

a drive element interconnecting said pulleys, and disposed in surrounding relation thereto,

said first pulley mounted for conjoint rotation with a driving shaft of said engine that rotates in a fixed ratio with the crankshaft of said engine,

said second pulley mounted for conjoint rotation with a shaft that is rotatably driven by said drive element attendant rotation of said first pulley,

a rotary valve means disposed in axial alignment with said shaft of said second pulley and secured to said shaft for conjoint rotation therewith,

said rotary valve means comprising a hollow, elongate, rotor means having in inlet and an outlet portion,

a non-rotatable connector means disposed in unrestricted fluid communication between the outlet of said carburetor or fuel injection means and the inlet of said rotor means,

a non-rotatable passage means having an inlet and an outlet portion,

the outlet of said rotor means disposed in fluid communication with the inlet of said passage means,

the outlet of said passage means disposed in fluid communication with said intake poppet valves, or in communication with port or reed valves,

said third and fourth pulleys being independently mounted relative to one another and providing control and tension pulleys, respectively, such that displacement of said control pulley effects a change in the phase relation between said first and second pulleys by changing the tension side pitch length of said drive element,

said serial connection of said connector means, said rotor means, and said passage means providing a means for commencing and terminating flow of a fuel mixture, or air, into the combustion chambers of said engine, independent of poppet valve action, on a timed basis so that the effective compression ratio of the engine is thereby varied to meet the varying load demand on the engine, said matching of engine power output and engine load obviating the need to throttle said engine and therefore substantially reducing the amount of negative work done by said engine and hence substantially reducing the amount of fuel consumed by said engine, and whereby such controlling of the effective compression ratio of such engine permits reduction of cylinder clearance volumes and hence permits increased expansion ratios and increased thermal efficiency.

4,484,544
VALVE ROTATOR

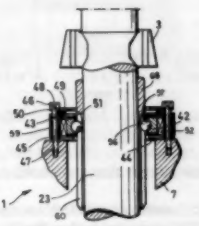
Nikolaus Wendel, Kierspe, and Joachim Plener, Halver, both of Fed. Rep. of Germany, assignors to Märkisches Werk GmbH, Halver, Fed. Rep. of Germany

Division of Ser. No. 290,508, Aug. 6, 1981, Pat. No. 4,424,773. This application Sep. 1, 1983, Ser. No. 528,530

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1980, 3029988; Apr. 7, 1981, 3113944; Jul. 16, 1981, 3128086

Int. Cl.³ F01L *1/32*

U.S. Cl. 123—90.3 **8 Claims**



1. A valve rotator effective between a valve stem and a support, said rotator comprising:

an upper spring plate;

a lower spring plate spaced along an axis below said upper plate;

a compression spring braced axially between said plates

a two-part link element having an upper part rotationally secured to said stem and a lower part rotationally fixed in at least one rotational direction relative to said axis on said lower plate;

a unidirectional clutch between said lower part and said support and permitting said lower part to rotate about said axis only in said one direction relative to said support, said upper and lower parts being axially telescoping, one of said parts being formed with a groove having a surface inclined to said axis and the other of said parts being formed with a recess provided with a ball riding on said surface, said lower part being connected via said clutch with said support; and

bolts securing said plates to said support and permitting limited vertical displacement of said plates relative to said support.

,4,484,545
HYDRAULICALLY ACTUATED EXHAUST VALVE FOR A RECIPROCATING COMBUSTION ENGINE

John G. Madsen, Copenhagen, Denmark, assignor to B & W Diesel, A/S, Copenhagen, Denmark

Filed Sep. 17, 1982, Ser. No. 419,522

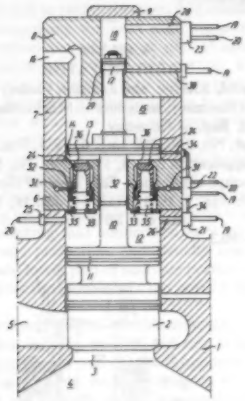
Claims priority, application Denmark, Sep. 22, 1981, 4192/81

Int. Cl.³ F01L *1/00*

U.S. Cl. 123—90.12 **5 Claims**

1. An exhaust valve for a reciprocating internal combustion engine comprising: a valve member axially movable towards a combustion chamber of an engine cylinder to close an exhaust

passage from said combustion chamber, and away from the combustion chamber to open the exhaust passage, and hydraulic means for maintaining the valve member in a passage closing position, wherein the valve member is rigidly connected with a first piston movable within a first hydraulic cylinder and with a second piston movable within a second hydraulic cylinder, each of said hydraulic cylinders defining together with the faces of said first and second pistons that are oriented away from the combustion chamber a first and second working chamber, respectively; the effective area of said first piston



being substantially larger than the effective area of said second piston;

separate duct means connected to each of said working chambers for carrying hudraulic fluid to and from the respective chamber;

a source of high-pressure hydraulic fluid and a source of low-pressure hydraulic fluid; and,

a separate control valve provided in each of said duct means for connecting the associated working chamber selectively to the high-pressure source or to the low pressure source in a predetermined sequence.

4,484,546

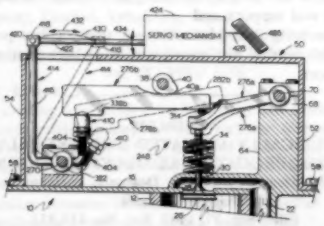
VARIABLE VALVE OPERATING MECHANISM FOR INTERNAL COMBUSTION ENGINES

Corliss O. Burandt, Plymouth, Minn., assignor to Investment Rarities, Incorporated, Minneapolis, Minn.

Continuation-in-part of Ser. No. 310,655, Oct. 13, 1981, Pat. No. 4,419,931. This application Feb. 22, 1982, Ser. No. 351,178

Int. Cl.³ F01L *1/34*

U.S. Cl. 123—90.15 **13 Claims**



10. A mechanism for operating either an inlet or exhaust valve of an internal combustion engine having a camshaft, a cam on said shaft, and a reciprocable valve member for opening and closing a valve port in communication with a combustion chamber of the engine, the mechanism comprising a first rocker arm having a curved cam section, first means mounting one end of said first rocker arm for pivotal movement about a first axis so that only the other end of said rocker arm constantly engages and moves in a direction to open said valve member, a second rocker arm, and second means mounting said second rocker arm for pivotal movement about a second axis shiftable in a curved path relative to said first axis, said first and second axes being movable relative to each other so that said cam is engageable with various longitudinal portions of said second rocker arm and so that said second rocker arm is engageable with various longitudinal portions of said curved cam section of said first rocker arm.

4,484,547

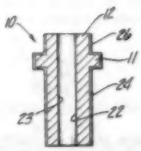
VALVE GUIDE AND METHOD FOR MAKING SAME

James W. Nickerson, 31 Schwaemmle, Mobile, Ala. 36608

Continuation of Ser. No. 399,953, Jul. 19, 1982, abandoned, which is a division of Ser. No. 115,345, Jan. 25, 1980, Pat. No. 4,342,293. This application Jan. 31, 1984, Ser. No. 575,483

Int. Cl.³ F01L *3/08*

U.S. Cl. 123—188 GC **3 Claims**



1. A method for manufacturing a guide for the stem of a valve of an internal combustion engine, said guide comprising an elongated tubular cylindrical body having a throughbore and an outer periphery, and being adapted to be positioned within a valve guide bore on the engine, said method comprising the steps of:

machining said body in a free state to its finished outer diameter and near finished bore diameter;

plating said outer periphery of said body with a copper-containing material;

nitriding the surface of the throughbore of the body; and

honing the throughbore surface of the body to a predetermined diameter prior to installation of the valve guide in the valve guide bore.

4,484,548

SPLIT TYPE INTERNAL COMBUSTION ENGINE

Fukashi Sugasawa, Yokohama, and Haruhiko Iizuka, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 12, 1980, Ser. No. 206,308

Claims priority, application Japan, Nov. 15, 1979, 54-148214

Int. Cl.³ F02D *17/00*

U.S. Cl. 123—198 F **5 Claims**

1. An internal combustion engine comprising:

(a) first and second cylinder units each including at least one cylinder;

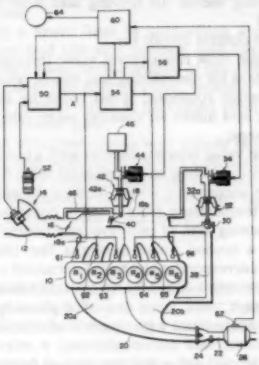
(b) a control circuit responsive to engine load for supplying a mixture of an optimum air/fuel ratio to said first and second cylinder units and for terminating the supply of the mixture to said second cylinder unit when the engine load is below a given value;

(c) an exhaust system having therein a catalytic converter for removing pollutants from the exhaust gases flowing therethrough from said cylinders; and

(d) an emergency circuit responsive to an increase in the temperature of said catalytic converter for forcing said control circuit to lean out the air/fuel ratio, said emergency circuit comprising:

a first comparator for comparing the temperature of said catalytic converter with a first reference value and providing a first command signal when the former is higher than the latter, said first comparator adapted to decrease the first reference value to a given level upon the occurrence of the first command signal;

a second comparator for comparing the temperature of said catalytic converter with a second reference value higher than the first reference value and providing a second command signal when the former is higher than the latter,



said second comparator adapted to decrease the second reference value to a given level upon the occurrence of the second command signal; and

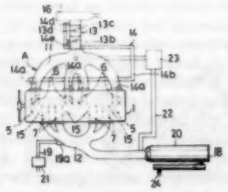
said control circuit being responsive to the first command signal for leaning out the air/fuel ratio to a first predetermined level and terminating the supply of the mixture to said second cylinder unit, said control circuit being responsive to the second command signal for leaning out the air/fuel ratio to a second predetermined level leaner than the first predetermined level.

4,484,549

4-CYCLE INTERNAL COMBUSTION ENGINE

Hiroshi Yokoyama, Hamamatsu, Japan, assignor to Suzuki Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Nov. 21, 1980, Ser. No. 209,108
Claims priority, application Japan, Jan. 9, 1980, 55-1151
Int. Cl.³ F02B *31/00*
U.S. Cl. 123—308 **6 Claims**



1. In a four-cycle internal combustion engine, wherein the engine includes a plurality of cylinders in each of which reciprocates and each of which includes a cylinder head having intake and exhaust valves, the inlet valves being connected to the downstream end of a main air inlet passage which passage has formed at its upstream end a carburetor, the carburetor having a venturi with a fuel inlet and a butterfly valve with the flap thereof located downstream of the venturi and fuel inlet for movement between an open and closed position, the improvement characterized by:

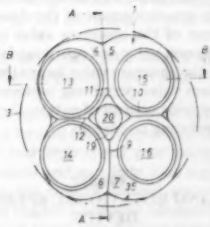
a path having only two inlet openings, wherein a first one of the inlet openings has a throttle throat restriction therein and opens to the inlet passage at a position upstream of the venturi and butterfly valve, whereby the amount of air entering the supplemental path is independent of the position of the flap of the butterfly valve; a second one of the inlet openings opens to the inlet passage at a fixed position which is in alignment with the flap of the butterfly valve when the flap is closed which fixed position is upstream of the flap when the flap is open, wherein the flap of the butterfly valve interrupts air and fuel flow into the second one of the inlet openings when the flap is closed and allows air and fuel to flow into the second one of the inlet openings when the flap is open; the supplemental path including a manifold in series therewith and an individual outlet line connecting the manifold to each cylinder, wherein each outlet line opens in a direction which extends chordwise with respect to the respective cylinder to enhance swirling motion of the air and fuel ejected; whereby when the butterfly valve is closed during idling, air is introduced only into the first one of the inlet openings and fuel introduction into the supplemental air line is blocked, and when the butterfly valve is open during load operation of the engine, fuel and air are sucked into the second one of the inlet openings for subsequent ejection through the outlet openings.

4,484,550

INTERNAL COMBUSTION ENGINE WITH AT LEAST ONE COMBUSTION CHAMBER HAVING FOUR VALVES

Bengt G. Gadefelt, and Lars L. Sääf, both of Södertälje, Sweden, assignors to Saab-Scania Aktiebolag, Sweden

PCT No. PCT/SE81/00196, § 371 Date Feb. 25, 1982, § 102(e) Date Feb. 25, 1982, PCT Pub. No. WO82/00318, PCT Pub. Date Feb. 4, 1982
PCT Filed Jun. 30, 1981, Ser. No. 355,752
Claims priority, application Sweden, Jul. 10, 1980, 8005072
Int. Cl.³ F02B *23/04*
U.S. Cl. 123—308 **7 Claims**



1. A cylinder head for an internal combustion engine, the cylinder head having at least one combustion chamber; each combustion chamber having two inlet openings in it for inlet valves and having two exhaust openings in it for exhaust valves; each combustion chamber being defined by four cavities formed in the cylinder head each cavity having in it a respective one of the inlet and exhaust openings for defining two inlet cavities and two exhaust cavities; each of the cavities bordering two of the other cavities;

the cavities being distributed, as seen in a base plane of said cylinder head, with one cavity in each of four quadrants of a circle corresponding to a cylinder cooperating with said combustion chamber; each of the cavities being generally rotationally symmetrical around a respective axis of symmetry intersecting the base plane; bordering ones of the four cavities communicating with each other at intersections between the bordering cavities, and ridges being formed at the intersections between the bordering cavities, whereby planar squish surfaces are defined in said

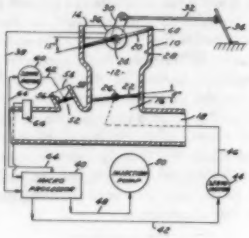
base plane of said cylinder head within said circle for causing turbulence of a fuel-air mixture.

4,484,551

AIR-AIR/FUEL CONTROL DEVICE

Michael A. Choma, Dearborn Heights; Philip W. Husak, Southgate, and Aladar O. Simko, Dearborn Heights, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 5, 1983, Ser. No. 511,023
Int. Cl.³ F02M 7/12
U.S. Cl. 123—336 **8 Claims**



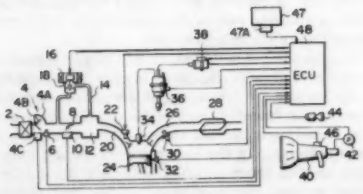
1. An air-air/fuel control device for a motor vehicle type internal combustion engine comprising a throttle body having an air/air-fuel induction passage open at one end to ambient air and connected at its opposite end to the engine intake manifold to be subject to the changing vacuum therein, axially spaced upstream and downstream throttle valves rotatably mounted in the passage for separate movements in a scheduled manner between open and closed positions for controlling flow through the passage, and means directly and indirectly connecting, respectively, the upstream and downstream throttle valves to the vehicle accelerator pedal for movement of each of the valves in response to movement of the pedal to assure positive movement of the upstream throttle valve in response to a movement of the pedal to a closed position regardless of the movement or non-movement of the downstream throttle valve, the diameter of the upstream valve being larger than that of the downstream valve and operating in a cross-sectional area surrounding the upstream valve larger than that surrounding the downstream valve permitting movement of the downstream valve to provide control of airflow through the passage during normal operating conditions.

4,484,552

ENGINE IDLING ROTATIONAL SPEED CONTROL DEVICE

Nobuyuki Kobayashi; Hiroshi Ito, and Nobuhiro Ohkawa, all of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 11, 1982, Ser. No. 407,170
Claims priority, application Japan, Aug. 13, 1981, 56-126887
Int. Cl.³ F02M 3/00
U.S. Cl. 123—339 **8 Claims**



1. An engine idling rotational speed control device for use in an engine having an associated accelerator pedal and air-conditioner and including a main intake passage, a bypass intake passage and a combustion chamber, said device comprising:

a throttle valve provided in said main intake passage and substantially fully closed when said accelerator pedal is released;

a flow rate control valve provided in said bypass intake passage for controlling the quantity of intake air taken into said combustion chamber through said bypass intake passage;

a valve driving means for driving said flow rate control valve; and

an electronic control circuit for:

controlling said flow rate control valve through said valve driving means for maintaining said engine rotational speed within a target rotational speed range by increasing or decreasing said intake air quantity taken into said bypass intake passage;

learning a first value which coincides with a converted value obtained by cancelling an incremental value for an idle up required in accordance with a load on the engine and/or a coolant temperature from a value corresponding to a current opening area of said flow rate control valve;

determining a second value during a fast idling control operation, corresponding to a predetermined opening area of said flow rate control valve, in accordance with the coolant temperature from one of a plurality of curves selected in accordance with operational conditions of said air-conditioner, said curves showing a relationship between the second value and the coolant temperature;

correcting said second value during the fast idling control operation on the basis of said first value to determine a corrected second value; and

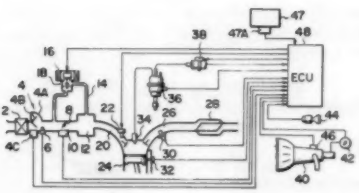
controlling said valve driving means by using said corrected second value during the fast idling control operation such that the engine rotational speed becomes a predetermined rotational speed corresponding to said corrected second value.

4,484,553

ENGINE IDLING ROTATIONAL SPEED CONTROL DEVICE

Nobuyuki Kobayashi; Hiroshi Ito, and Mamoru Kobashi, all of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 11, 1982, Ser. No. 407,171
Claims priority, application Japan, Aug. 13, 1981, 56-126888
Int. Cl.³ F02M 3/00
U.S. Cl. 123—339 **13 Claims**



1. An engine idling rotational speed control device for an engine having an associated accelerator pedal and including a main intake passage, a bypass intake passage and a combustion chamber, said device comprising:

a throttle valve provided in said main intake passage and substantially fully closed when said accelerator pedal is released;

a flow rate control valve provided in said bypass intake passage for controlling intake air quantity introduced into said combustion chamber of said engine through said bypass intake passage;

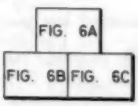
a stepping motor for driving said flow rate control valve;
a vehicle speed sensor for producing a pulse signal commensurate to a vehicle speed; and
an electronic control circuit for:
controlling a step position of said stepping motor such that an engine rotational speed becomes within a target rotational speed range;
learning an idle step number such that said idle step number decreases when the actual engine rotational speed is more than a target rotational speed and increases when the actual engine rotational speed is less than the target rotational speed;
determining a lower limit by subtracting a predetermined value from said idle step number, said lower limit being larger than a value representative of full-close state of said intake air flow rate control valve, whereby said intake air flow rate control valve is prevented from being closed below said lower limit;
detecting an abnormal state of said vehicle speed sensor; and
interrupting said learning of the idle step number when said abnormal state of said vehicle speed sensor is detected so that the determined lower limit at the time when said learning is interrupted is maintained.

4,484,554

MIXTURE CONTROL APPARATUS FOR CARBURETOR

Tetsuo Nakajima, and Hiroshi Irino, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 18, 1984, Ser. No. 571,767
Claims priority, application Japan, Jan. 27, 1983, 58-10519
Int. Cl.³ F02D *9/08, 11/10;* **F02M** *1/00*
U.S. Cl. 123—339 **1 Claim**



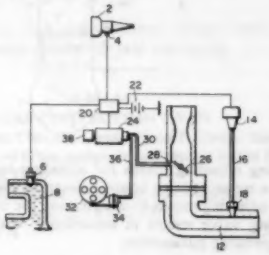
1. A mixture control apparatus for a carburetor comprising a choke valve disposed on the upstream side and a throttle valve on the downstream side respectively in an air inlet relative to a venturi section admitting an opening end of a main fuel nozzle, first rotary cam means interlocked with said choke valve and adapted to operate said choke valve from the totally opened position to the totally closed position thereof, second rotary cam means interlocked with said throttle valve and adapted to operate said throttle valve to a prescribed degree of opening for fast idling, and an electric motor for driving said first and second rotary cam means and determining the rotational positions thereof according to the operating condition of an internal combustion engine, which mixed control apparatus is characterized in that said electric motor is adapted to be rotated in a normal direction and in a reverse direction from a home position thereof as the boundary, that said first and second cam means have the shapes thereof selected so that when said electric motor is rotated in the normal direction from said home position, said choke valve will be retained at a substantially fully opened position and said throttle valve will have the degree of opening thereof increased and, when said electric motor is rotated in the reverse direction from said home position, said choke valve will have the degree of opening thereof decreased and said throttle valve will have the degree of opening thereof increased, that the transition of said electric motor from the reverse rotation side past the home position to the normal rotation side is effected based on a logical conjunction of at least the three conditions that the engine temperature should exceed a boundary temperature between the cold and hot states, the engine's rotational speed should exceed the prescribed value, and the throttle lever should be mechanically separated from said second rotary cam means, and that characteristic of hysteresis is conferred upon the switch between the cold and hot states by causing said boundary temperature between the cold and hot states to be switched in accordance as the engine is in the cold state or in the hot state.

4,484,555

IGNITION TIMING CONTROL APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Katsuto Miura, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Feb. 4, 1983, Ser. No. 463,809
Claims priority, application Japan, Feb. 15, 1982, 57-22215
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—407 **7 Claims**



1. An ignition timing control apparatus for an internal combustion engine, comprising:
(a) negative pressure advancing means for controlling a governor advancing device arranged at a distributor in accordance with an operation condition of the engine to advance an ignition timing;
(b) gear position sensing means for producing a high speed gear position signal when a transmission gear is at a high speed gear position;
(c) temperature sensing means for producing a temperature signal indicating that the engine is at least in a warm-up condition;
(d) load sensing means for producing a light load signal when the engine is operated under a light load condition; and
(e) means for permitting the control to said governor advancing device by said negative pressure advancing means when one of said high speed gear position signal, said temperature signal and said light load signal is produced and inhibiting the control to said governor advancing device by said negative pressure advancing device when none of said high speed gear position signal, said temperature signal and said light load signal is produced.

4,484,556

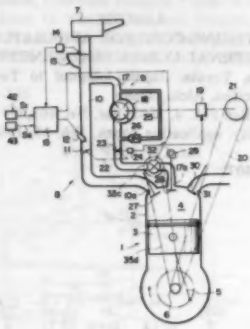
SUPERCHARGE CONTROL MEANS FOR AN INTERNAL COMBUSTION ENGINE

Haruo Okimoto, and Ikuo Matsuda, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Dec. 13, 1982, Ser. No. 449,228
Claims priority, application Japan, Dec. 22, 1981, 56-192343[U]
Int. Cl.³ F02B *29/00*
U.S. Cl. 123—432 **5 Claims**

1. An internal combustion engine including chamber means of which volume is cyclically changed in response to a rotation of the engine to effect a plurality of operating strokes including an intake stroke, an intake system including main intake passage means and auxiliary intake passage means both leading to said chamber means, supercharging means for providing a supply of supercharging gas to said auxiliary intake passage means, timing valve means provided in said auxiliary intake

passage means between said chamber means and said supercharging means, means for actuating said timing valve means for cyclically opening said auxiliary intake passage means in synchronim with the rotation of the engine to allow the supercharging gas to pass to the chamber means, electrically operated timing adjusting means for adjusting opening timing of said valve means, timing control electrical means for controlling said adjusting means to determining the opening timing of said timing valve means in accordance with a plurality of engine operating parameters.

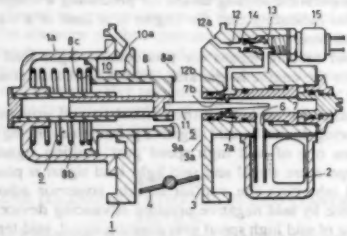


4,484,557

VARIABLE VENTURI CARBURETOR

Mamoru Matsubara, Obu, Japan, assignor to Asian Kogyo Kabushiki Kaisha, Aichi, Japan

Filed May 25, 1982, Ser. No. 381,900
Claims priority, application Japan, Jul. 13, 1981, 56-109599
Int. Cl.³ F02M 7/00
U.S. Cl. 123—439 **2 Claims**



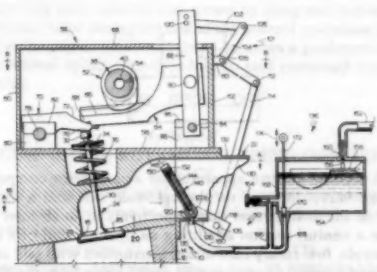
1. In a variable venturi carburetor for an internal combustion engine having a float chamber, an air intake passage including an upstream portion, a venturi portion provided in the air intake passage, a fuel passage communicating with the float chamber and the venturi portion, a fuel jet provided in the fuel passage and including a fuel metering portion having a downstream portion and a portion defining annular opening area, a suction piston having a bottom end and postioned for reciprocating transversely across the venturi portion in response to load conditions of the engine, and a fuel metering needle fixed to the bottom end of the suction piston at its base portion for controlling an annular opening area of the fuel metering portion of the fuel jet by reciprocation of its free end; the improvement comprising an air bleed passage having a changeable cross-sectional area and an inlet opening into said upstream portion of said air intake passage and an outlet opening into said downstream portion of said fuel metering portion of said fuel jet, actuator means provided adjacent to said air bleed passage for controlling the amount of bleed air by changing said cross-sectional area of said air bleed passage in response to engine load conditions, an air bleed portion formed directly downstream of said fuel metering portion and having a circumference and diameter which is larger than that of said fuel metering portion, said inside diameter of said air bleed portion being such that at engine idle operation, the restriction area of said air bleed portion is larger than that adjusted by said actuator so as to effect an optimum control of the air-fuel ratio, said fuel passage having an inside diameter downstream of said air bleed portion larger than that of said air bleed portion, said outlet of said air bleed portion being comprised of at least one opening arranged along said circumference of said air bleed portion.

4,484,558

VARIABLE FUEL DELIVERY SYSTEM FOR INTERNAL COMBUSTION ENGINES

Corliss O. Burandt, Plymouth, Minn., assignor to Investment Rarities, Incorporated, Minneapolis, Minn.

Filed May 5, 1983, Ser. No. 492,015
Int. Cl.³ F02M 39/00
U.S. Cl. 123—452 **18 Claims**



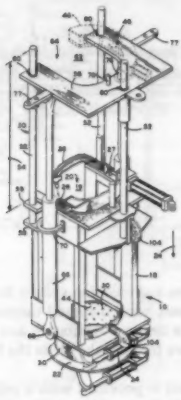
1. A variable fuel delivery system for an internal combustion engine having a camshaft, a cam on said camshaft and a reciprocable valve member for opening and closing a port in communication with a combustion chamber of the engine, the system comprising means providing an induction path or passage having a horizontal portion for delivery of fuel and air to said combustion chamber via said valve member, an air door pivotally mounted in said horizontal portion of said passage means for movement in said horizontal portion between a substantially closed position in which said pivotal door member is more vertical and a substantially open position in which said door member is more horizontal, a nozzle located adjacent the free end of said door member, passage means leading to said nozzle for supplying fuel to said nozzle, and chamber means for supplying fuel to said passage means for flow to said nozzle, said chamber means being mounted at an elevation relative to said door so that when said door is in its said substantially closed position said nozzle is above the level of fuel in said chamber means so that fuel is prevented from being gravitationally discharged through said nozzle, and when said door is in its said substantially open position, said nozzle is below the level of fuel in said chamber means so that fuel is permitted to gravitationally flow through said passage means and be discharged through said nozzle.

4,484,559

APPARATUS FOR REMOVING MATERIAL SUCH AS CONCRETE FROM UNDERWATER PIPELINES

Billy R. Ledford, Huldenberg, and Alan J. Hartt, Kalmphout, both of Belgium, assignors to McDermott Incorporated, New Orleans, La.

Filed Mar. 1, 1982, Ser. No. 353,749
Int. Cl.³ B28D 1/00
U.S. Cl. 125—1 10 Claims



1. Apparatus for removing covering material from underwater pipelines, the apparatus comprising

a. a frame;

b. means for clamping said frame to a material covered underwater pipeline;

c. at least one member having an arcuate surface for positioning a plurality of cutting means in spaced relation circumferentially about the material covered pipeline;

d. carriage means attached to said frame for effecting movement of said member in a direction along the pipeline with said arcuate surface adjacent the pipeline covering material; and

e. a plurality of cutting means attached to said member and spaced apart in a direction of curvature of said arcuate surface for cutting the pipeline covering material at a plurality of points spaced-apart circumferentially of the pipeline simultaneously, said carriage means including at least one guide member rigidly attached to said frame and extending beyond said clamp means to act as a cantilever for support of said cutting means away from the points of attachment of the apparatus to a pipeline.

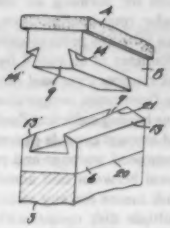
4,484,560

DIAMOND SEGMENTED SAW BLADE

Takesaburo Tanigawa, Ueno, Japan, assignor to Asahi Diamond Industrial Co., Ltd., Tokyo, Japan

Filed Jun. 24, 1983, Ser. No. 507,347
Claims priority, application Japan, Jul. 13, 1982, 57-105948[U]
Int. Cl.³ B28D 1/04
U.S. Cl. 125—15 6 Claims

1. A saw blade comprising a central member; a removable cutting tip; and mounting means between said central member and said cutting tip for removably mounting said cutting tip on said central member; said mounting means comprising a dovetail connection having a dovetail groove on one of said central member or said cutting tip and a tenon on the other of said central member or said cutting tip, said groove having side walls inclined toward each other from one end of said grooves to the other to define a wedge shape, and top walls adjacent the open top of said groove that taper upwardly and inwardly



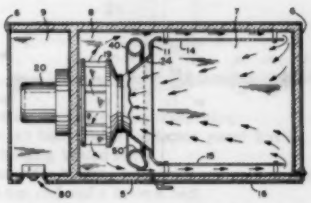
toward each other; and complementary formed walls on said other of said central member or said cutting tip.

4,484,561

GAS CONVECTION OVEN

George T. Baggott, Cleveland, and Myron T. Cooperrider, North Royalton, both of Ohio, assignors to Crescent Metal Products, Inc., Cleveland, Ohio

Filed Sep. 14, 1982, Ser. No. 418,056
Int. Cl.³ F24C 15/32
U.S. Cl. 126—21 A 24 Claims



1. A convection oven comprising a heating compartment, a package gas burner, heat exchanger means for conducting therethrough the products of combustion from combustion of gas initiated at said package gas burner, convection blower means for blowing air past said heat exchanger means for heating thereby and into said heating compartment for heating the same, said blower means including inlet means for drawing in air from said heating compartment for recirculation thereof past said heat exchanger means and into said heating compartment, said heat exchanger means having a pipe for conducting therethrough from a relatively upstream portion toward a relatively downstream portion at least one of the flame and products of combustion from said gas burner, said relatively upstream portion of said pipe having side walls tapering toward each other in the direction of movement thereacross of air blown by said blower means, and rounded end walls connecting opposite ends of said side walls, said walls being cooperative with the air flow from said blower means to draw air about substantially the entire surface area of said upstream portion of said pipe.

4,484,562

FLEXIBLE DISK DAMPER

Daryl D. Burt, Golden, Colo., assignor to Adolph Coors Company, Golden, Colo.

Filed May 6, 1983, Ser. No. 492,373
Int. Cl.³ F23L 13/00
U.S. Cl. 126—285 R 7 Claims

1. A flexible disk damper which is capable of providing a

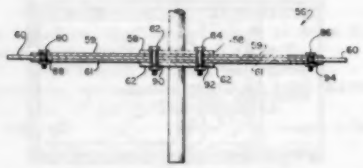
substantially air-tight seal for an opening of at least 4 feet in diameter over a range of temperatures from room temperature to 950° F. comprising:

annular seat means for forming an annular damper seat having an annular ring configuration, said annular seat means having an inherent predetermined warpage resulting from said diameter of at least 4 feet and operation of said flexible disk damper over said range of temperatures which can vary from room temperature to 950° F.;

multiple disk means having sufficient flexibility to deform by a predetermined amount capable of compensating for said inherent predetermined warpage and providing a substantially air-tight seal between said annular seat means and said multiple disk means for any circumferential orientation of said multiple disk means with said annular seat means, said multiple disk means comprising:

central disk means having a diameter sufficient to engage said annular seat means along peripheral portions of said central disk means to form said substantially air-tight seal and having sufficient flexibility to deform by said predetermined amount;

support disk means disposed on opposing sides of said central disk means for supportingly joining said central disk means on said opposing sides of said central disk means by providing a supporting structure having a diameter and thickness sufficient to allow deflection of said central disk means in opposing directions by said predetermined amount while simultaneously preventing production of unit stresses on said central disk means



which exceed the yield point of said central disk means as a result of the leveraging of forces which are produced on said peripheral portions of said central disk means to both open and close said flexible disk damper;

coupling means for joining said central disk means and said support disk means to simultaneously provide support and movement between said central disk means and said support disk means to allow said central disk means and said support disk means to independently flex;

additional support disk means disposed on opposing sides of said support disk means for supportingly joining said support disk means on said opposing sides of said support disk means by providing a supporting structure having a diameter and thickness sufficient to allow deflection of said support disk means in opposing directions to allow said central disk means to deform sufficiently to form an air-tight seal while simultaneously preventing production of unit stresses on said support disk means which exceed the yield point of said support disk means as a result of the leveraging of forces which are produced on said support disk means from said central disk means to both open and close said flexible disk damper;

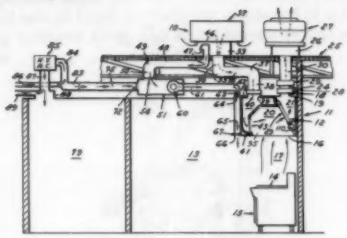
additional coupling means for joining said support disk means and said additional support disk means to simultaneously provide support and movement between said support disk means and said additional support disk means to allow said support disk means and said additional support disk means to independently flex.

4,484,563

AIR VENTILATION AND POLLUTION CLEANING SYSTEM

Frederick F. Fritz, Oxford, and Ralph L. Daigle, Ortonville, both of Mich., assignors to Alco Foodservice Equipment Company, Miami, Fla.

Filed Oct. 11, 1983, Ser. No. 540,346
Int. Cl.³ F24C *15/08*; F23J *11/00*
U.S. Cl. 126—299 D **12 Claims**



1. An air ventilation and cleaning system for cooking equipment having an exhaust hood disposed thereover in a kitchen in a building having a heating-ventilating and air-conditioning means for temperature treating the air in the building, characterized in that:

(a) the exhaust hood is provided with a collection chamber disposed upwardly from and over the cooking equipment;

(b) an exhaust chamber is formed in said exhaust hood and communicates with said collection chamber through an opening therebetween;

(c) filter means is operatively mounted in said opening between said collection chamber and said exhaust chamber;

(d) an exhaust passage means is connected to said exhaust chamber and extends from the kitchen to the exterior of the building in which the exhaust hood is mounted;

(e) a water-wash filter means and a final filter means are operatively mounted in series in the exhaust passage means;

(f) an exhaust fan means is operatively mounted on the exterior end of said exhaust passage means for exhausting a predetermined volume of air from said collection chamber and through the filter means, to exhaust cooking vapors, odors, fumes, smoke and other pollutants from the collection chamber;

(g) a first and second source of fresh air is provided;

(h) a first fresh air passage means is connected to said first source of fresh air and an air intake chamber in said exhaust hood;

(i) said air intake chamber communicates with said collection chamber through an opening in which is disposed a fresh air diffuser means for directing fresh air from the first fresh air passage means toward the first named filter means;

(j) a temperature control unit is operatively mounted in said building and is connected by an air curtain passage means, including a vertical portion disposed adjacent and along the front of the exhaust hood, for directing a temperature controlled air curtain downwardly along the front side of the exhaust hood, to prevent cooking vapors, odors, fumes, smoke and other pollutants arising from the cooking equipment to flow into the building from the kitchen in which the cooking equipment is positioned;

(k) a second fresh air passage means is operatively connected between said second source of fresh air and said temperature control unit for selectively supplying fresh air to said temperature control unit;

(l) a temperature treated air passage means is provided for selectively supplying temperature treated air to the temperature control unit from a source of the same which is

exterior to the kitchen in which the cooking equipment is positioned; and,

(m) said second fresh air passage means and temperature treated air passage means each includes flow control means for selectively controlling the flow of any combination volume of fresh air and temperature treated air to the temperature control unit, for forming an air curtain of a predetermined temperature.

4,484,564

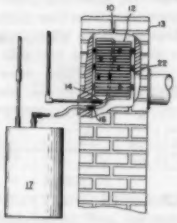
TAP WATER PREHEATER

Herbert V. Erickson, 1219 S. Fife, Tacoma, Wash. 98405

Filed Jul. 28, 1982, Ser. No. 402,605

Int. Cl.³ F24H *1/00*

U.S. Cl. 126—365 **4 Claims**



1. A device for heating a fluid with the exhaust gases from a heat producing apparatus flowing through an exhaust gas conduit comprising:

longitudinal fluid conduit means arranged in a coil and mounted within the exhaust gas conduit;

a plurality of baffles mounted to the fluid conduit means so as to form a spiral succession of baffles which will divert the exhaust gases into a spiral path along the length of the fluid conduit means in the rotational direction of the turns of the coil; and

a plurality of arc-shaped brackets, each positioned between adjacent turns of the coil and each having a tab extending outwardly from the coil for spacing the coil from the wall of the exhaust gas conduit while not interfering with gas flow.

4,484,565

DEVICE FOR SENSING MOVING LIGHT SOURCE

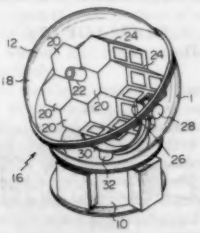
Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Aug. 5, 1983, Ser. No. 520,777

Claims priority, application Japan, Aug. 11, 1982, 57-139298

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—425 **10 Claims**



1. A device for chasing a moving light source, comprising:

a casing which is open at opposite ends thereof;

a first closure member for closing one of the open ends of said casing and formed with a generally cruciform opening therethrough;

a second closure member for closing the other open end of the casing;

a first photosensor mounted on the second closure member substantially in register with the center of the cruciform opening in the first closure member; and

at least a pair of symmetrical second photosensors mounted on the second closure member such that each of said second photosensors is intersected by an imaginary perpendicular extending from an adjacent outermost edge of the cruciform opening on a predetermined portion thereof.

4,484,566

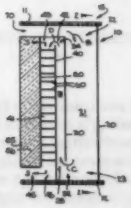
SOLAR COLLECTOR PANEL AND HEAT STORAGE SYSTEM

Emmanuel Gonzalez, 1307 Ellison St., Falls Church, Va. 22046

Filed Mar. 8, 1982, Ser. No. 355,369

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—429 **25 Claims**



11. A solar heating system comprising:

(A) an air-based solar collector panel having means for discharging heated air;

(B) a tank for holding water wherein said tank comprises

(i) a top end and a bottom end;

(ii) gas bubbling means located near said bottom end of said tank;

(iii) a plurality of baffle members disposed in said tank for providing a circuitous path of travel from near said tank bottom to said tank top for air bubbles discharged from said bubbling means into said water for extending the contact between said air bubbles and said water;

(iv) a perforate slab of thermal insulation material constructed from a material lighter than water disposed in said tank for floating on the surface of said water and wherein said slab has a size sufficient to substantially cover said water surface;

(v) gas discharge means located at the top end of said tank; and

(vi) thermal insulation material substantially surrounding said tank;

(C) first conduit means for providing gas flow communication between said panel discharge means and said bubbling means; and

second conduit means for providing gas flow communication between said tank gas discharge means and a space to be heated.

4,484,567

HEAT RECOVERY GLAZING

Paul T. Sikora, Malarane, Reenascreena, Rosscarbery, County Cork, Ireland

Filed Feb. 4, 1982, Ser. No. 354,676

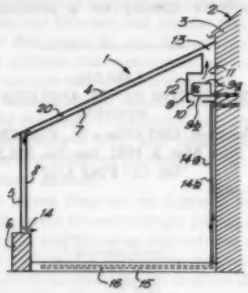
Claims priority, application Ireland, Mar. 5, 1981, 475/81

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—431 **11 Claims**

1. A method of extracting heat from the air in a heated

enclosure having a double glazing assembly, which comprises a pair of inner and outer transparent panels in substantially parallel spaced apart relationship defining a cavity therebetween and a pair of ports spaced apart by a substantial distance and adapted to enable air entering one of the ports to travel through the cavity and exit therefrom via the other port, while reducing heat losses from the enclosure to the exterior through the double glazing assembly wherein the air temperature of the enclosure exceeds the external air temperature, which method comprises providing a heat pump having a heat-collecting



element located in the enclosure and a heat-dissipating element located elsewhere, causing a stream of air from the enclosure to flow past the heat-collecting element for cooling thereby, causing the cooled air stream thereafter to enter the cavity of the assembly and travel therethrough so that it is warmed by heat passing from the enclosure through the inner panel into the cavity, thereby (1) to reduce heat losses from the enclosure to the exterior through the double glazing assembly and (2) to artificially maintain the air of the cavity at a temperature lower than the equilibrium temperature of still air therein, and returning the air stream emerging from the cavity to the enclosure.

4,484,568

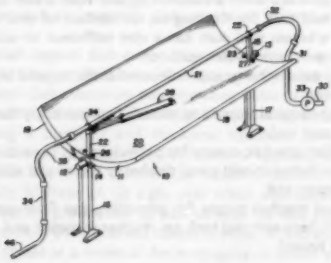
OVERHEAT EMERGENCY OUTFOCUS MECHANISM FOR SOLAR ENERGY COLLECTOR

John D. Witt, Mesquite, Tex., assignor to Solar Kinetics, Inc., Dallas, Tex.

Filed Aug. 31, 1981, Ser. No. 297,553

Int. Cl.³ F24J 3/02

U.S. Cl. 126—438 **3 Claims**



1. A solar energy collector-converter of the focusing trough reflector type wherein said trough is rotatable about a horizontal axis and an energy receiver is mounted at the line of focus of said trough reflector comprising: means positioning the energy receiver at said line of focus, fusible link overheat sensor, means providing an output indicative of a condition of said receiver at said line of focus, fusible link overheat sensor, means providing an output indicative of a condition of said receiver and spring operated mechanical control means responsive to said output to change the position of said receiver relative to said line of focus by a set magnitude whereby the amount of focused solar energy applied to said receiver may be varied according to said condition.

4,484,569

ULTRASONIC DIAGNOSTIC AND THERAPEUTIC TRANSDUCER ASSEMBLY AND METHOD FOR USING

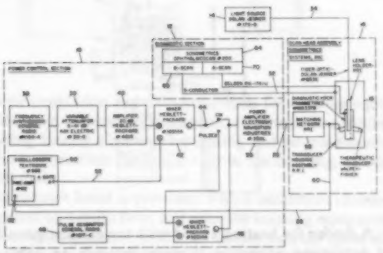
Jack Driller, Ridgewood, N.J.; William G. Henriksen, Hauppauge, N.Y.; D. Jackson Coleman, Haworth, and Frederic L. Lizzi, Tenafly, both of N.J., assignors to Riverside Research Institute, New York, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,506

Claims priority, application Czechoslovakia, Mar. 13, 1981, 1836-81

Int. Cl.³ A61B 10/00

U.S. Cl. 128—660 **20 Claims**



17. An ultrasonic transducer assembly, useful for non-invasive applications, comprising:

a housing;

a transducer means mounted within said housing for radiating a beam of acoustic energy toward a focal point in response to supplied electrical signals; and

an alignment light source for emitting a light beam, said source being mounted within said housing and aligned with said transducer for providing a spot of illumination at said focal point to provide a visual indication of the acoustic energy beam.

4,484,570

DEVICE COMPRISING AN IMPLANT AND SCREWS FOR FASTENING SAID IMPLANT TO A BONE, AND A DEVICE FOR CONNECTING TWO SEPARATED PIECES OF BONE

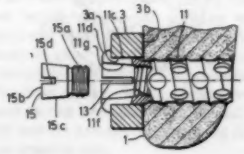
Franz Sutter, Niederdorf; Fritz Straumann, Waldenburg, and Joram Raveh, Oberbottigen, all of Switzerland, assignors to Synthes Ltd., Wayne, Pa.

Filed May 22, 1981, Ser. No. 266,352

Claims priority, application Switzerland, May 28, 1980, 4155/80

Int. Cl.³ A61F 5/04

U.S. Cl. 128—92 D **15 Claims**



1. A device for mounting an implant in a bone, said implant having at least two clearance holes, the device comprising

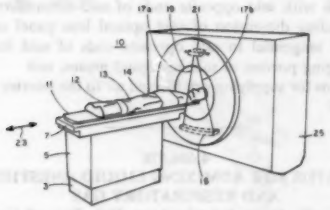
screws extending through said holes for fastening the implant to a bone, each of said screws having a central axis and including a threaded portion to be screwed into the bone and one end facing away from the bone, said threaded portion of each of said screws having a longitudinal opening that opens in another screw end facing toward the bone and a plurality of lateral holes opening into said longitudinal opening; and retaining means on said one end of each of said screws, said retaining means including a collar provided on said one end and projecting substantially radially outwardly from said central axis and engaging the implant at its side facing away from the bone, a clamping part provided in said one end and having slots and insertable in the clearance hole of the implant, and an expander at least partially insertable in said clamping part so that said longitudinal opening of said threaded portion of each of said screws is at least in part free and the bone can grow into said longitudinal opening and through said lateral holes, said expander and said clamping part being displaceable in an axial direction relative to each other and being provided with surfaces in contact with one another, said surfaces converging in said axial direction, whereby by axially screwing said screws into the bone said collar of said one end of each screw presses the implant against the bone, and by displacing said expander in said axial direction said clamping part of said one end expands and becomes fixedly clamped within the clearance hole of the implant.

4,484,571

PATIENT SECURITY AND RESTRAINT SYSTEM

Herb F. Velazquez, Milwaukee, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Jan. 3, 1983, Ser. No. 454,933
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—134 **6 Claims**



1. In a medical diagnostic apparatus including:
elongated support means for supporting a patient;
strap means for restraining and securing the patient to said support means;
runner means secured to said strap means; and
track means co-extensive with at least a portion of said support means and disposed laterally along each edge of said support means, said track means being configured to cooperate with a complementarily shaped portion of said runner means, such that the position of said runner means relative to said support means is slidably adjustable;
the improvement wherein said track means and runner means comprise, respectively:
a pair of elongated members, one of said members being disposed laterally along one edge of said support means, the other one of said members being spaced from said one member and disposed laterally along the other edge of said support means, each of said elongated members having a longitudinal, substantially cylindrical channel formed therein, said channel communicating to the exterior by means of a slit-like aperture formed in said elongated member; and
said runner means having a rod-like portion and a tapered portion extending laterally from said rod-like portion, at least one of said runner means being captured within said cylindrical channel in each of said elongated means by means of said rod-like portion such that said tapered portion passes through said slit-like aperture, said runner means being thus enabled for longitudinal movement along said elongated member.

4,484,572

POSITION SECURING DEVICE

James L. Dobson, 1268 Lee Ann Dr., Decatur, Ga. 30035

Filed Feb. 22, 1983, Ser. No. 468,353
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—134 **5 Claims**

1. A position retaining device, for voluntary use by a person wishing to remain generally in the prenatal position, said retaining device comprising a vest portion for being received over the upper body of said person, said vest portion including a first shoulder strap and a second shoulder strap, each said shoulder strap passing over one shoulder of said person, and a body encircling strap generally encircling the body of said person approximately in the chest area of said person, said shoulder straps being fixed to said body encircling strap at the back of said person, said first shoulder strap being fixed at a first back point and said second shoulder strap being fixed at a second back point, said first back point and said second back point being spaced apart along said body encircling strap, said shoulder straps being fixed to said body encircling strap at the front of said person, said first shoulder strap being fixed at a first front point and said second shoulder strap being fixed at a second front point, said first front point and said second front point being arranged for relative motion therebetween, said retaining device further including separable sling means depending from the front of said vest portion, said sling means including a first sling strap depending from said body encircling strap, said first sling strap being fixed to said body encircling strap generally at said first front point, a second sling strap depending from said body encircling strap, said second sling strap being fixed to said body encircling strap generally at said second front point, and fastening means for selectively fastening said sling means around the legs of said person while said person is generally in the prenatal position, said fastening means being readily releasable by said person.

4,484,573

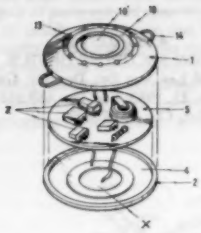
ALARM DEVICE FOR USE IN A BABY'S DIAPER

Kil-Soo Yoo, Inchon, Rep. of Korea, assignor to Naewae Electric Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 22, 1982, Ser. No. 400,816
Int. Cl.³ A61B *19/00*
U.S. Cl. 128—138 A **9 Claims**

1. An alarm device for use in a baby's diaper, comprising a circuit board having an electronic circuit thereon and provided in the space formed between a case and a cover, a ring-shaped detecting part and a round-shaped detecting part being fixed into recesses formed in the middle part of the outer surface of said case, said ring-shaped detecting part being concentric with

and spaced apart from said round-shaped detecting part, and a buzzer being secured inside of said cover and over a round



hole formed in the middle of said cover for producing an alarm when said detecting parts contact moisture in the baby's diaper such that electricity flows between said detecting parts.

4,484,574

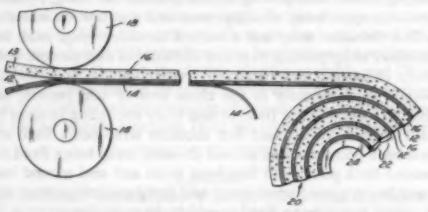
SELF-ROLLED FOAM TAPE WITHOUT RELEASE LAYER AND METHOD OF MAKING SAME

Mark A. DeRusha, El Toro; Thomas E. Schultz, Laguna Niguel, and Stephen W. Luchio, Riverside, all of Calif., assignors to Keene Corporation, New York, N.Y.

Filed Jan. 25, 1984, Ser. No. 573,854

Int. Cl.³ A61L *15/00*; B32B *1/08, 7/06, 7/12*

U.S. Cl. 128—156 **18 Claims**



10. An article of manufacture, comprising

a web of closed-cell polyethylene foam material having a front side and a back side;

a layer of pressure-sensitive adhesive permanently affixed to said front side;

said adhesive layer being releasably attachable to said back side of said foam to permit the front side of one part of said web to be adhesively attached to the back side of another part of said web and then separated without substantially disrupting said back side.

11. The article of claim **10**, wherein said adhesive is hypoallergenic.

17. The article of claim **11**, wherein said article is a bandage applied to a limb of a mammal in overlapping layers, the adhesive of one layer being in direct physical contact with the foam of an adjacent layer.

4,484,575

LOOSE FITTING SUPPLIED AIR RESPIRATOR HOOD

Brock F. Brockway, Mill Valley; Anthony L. Moretti, San Rafael; Anselmo P. Pellolio, Cotati, and Jimmie Rasmussen, Petaluma, all of Calif., assignors to E. D. Bullard Company, Sausalito, Calif.

Filed Jan. 13, 1983, Ser. No. 457,527

Int. Cl.³ A62B *7/00*

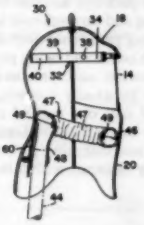
U.S. Cl. 128—201.23 **7 Claims**

1. A loose fitting supplied air respirator hood consisting essentially of:

(a) a hollow generally tubular body portion having a closed end and an open end, said body portion being made of flaccid non-stretchable, air-impervious material and dimensioned to enclose the head and neck of the wearer;

(b) a curved optical lens panel transparent to light in a given frequency and intensity range sealingly interposed in the sidewall of said generally tubular body portion adjacent said closed end thereof; said optical lens panel being made of relatively stiff, resilient, non-stretchable, air-impervious material having a dimension extending axially of said tubular body portion and a dimension extending circumferentially of said tubular body portion;

(c) head band means for supporting said hood on the cranial portion of the head of the wearer including a forehead



engaging portion, said head band means being fixed only at opposite ends of said forehead engaging portion of said head band means solely to said optical lens panel at opposite ends of said circumferentially extending dimension of said optical lens panel, said circumferentially extending dimension of said optical lens panel being greater than the length of said forehead engaging portion of said head band means with said opposite ends of said circumferentially extending dimension of said optical lens panel substantially tangential to said opposite ends of said forehead engaging portion of said headband means, and

(d) means for supplying pre-filtered air to the interior of said hood.

4,484,576

APPARATUS FOR ADMIXING LIQUID ANESTHETICS AND RESPIRATORY GAS

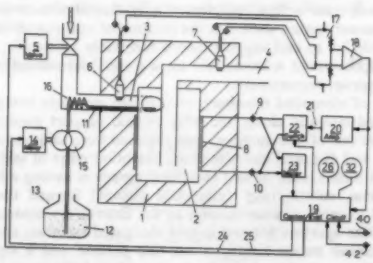
Scato Albarda, Gross Schenkenberg, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 368,388, Apr. 14, 1982,. This application Oct. 3, 1983, Ser. No. 538,749

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1981, 3116951

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—202.22 **2 Claims**



1. A method of controlling the flow of liquid anesthetic and respiratory gas to a mixing chamber having an inlet and an

outlet for mixing vaporized liquid anesthetic with the respiratory gas, comprising:

providing a flow of respiratory gas to a mixing chamber;

providing a flow of liquid anesthetic to said mixing chamber,

causing said flow of liquid anesthetic to admix with said flow of respiratory gas to an extent to atomize and evaporate the liquid anesthetic;

establishing a heat exchange relationship between the respiratory gas and liquid anesthetic before they enter the mixing chamber for equating the inlet temperatures thereof;

sensing a difference between the inlet temperature and an outlet temperature of the evaporated liquid anesthetic plus gas mixture to and from the chamber which difference is a result of the heat of evaporization of the liquid anesthetic;

using the temperature difference to control the flow of liquid anesthetic to the chamber, the temperature difference being directly proportional to a ratio in concentrations between the evaporated anesthetic and the respiratory gas.

4,484,577

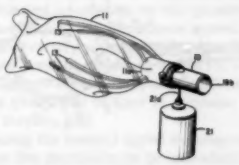
DRUG DELIVERY METHOD AND INHALATION DEVICE THEREFOR

Marvin A. Sackner, Miami Beach, and Herman Watson, Miami, both of Fla., assignors to Key Pharmaceuticals, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 285,992, Jul. 23, 1981, abandoned, which is a continuation of Ser. No. 280,631, Jun. 6, 1981, abandoned, which is a continuation of Ser. No. 142,697, Apr. 22, 1980, abandoned. This application May 12, 1982, Ser. No. 377,469

Int. Cl.³ A61M *15/00*

U.S. Cl. 128—203.28 **24 Claims**



15. A drug delivery device for administering a drug contained in an aerosol to a breathing passage of a patient for absorption on the mucous tissue of the patient which comprises

(a) a collapsible airbag of fixed maximum dimensions which is impervious to passage of air except for an airbag opening;

(b) a piece having one end adapted for communication with the breathing passage and connected by a bidirectional channel through said piece to the opposite end thereof to said airbag opening, said piece having a drug introduction opening for the introduction of an aerosol spray containing a predetermined amount of a drug, said drug introduction opening disposed such that said aerosol spray is introduced directly into said airbag through said piece and said airbag opening, in a direction away from said one end; and

(c) signal means in said bidirectional channel to indicate when the rate of inhalation of said aerosol spray from said airbag exceeds a desirable limit, whereby the patient taking said drug is reminded to decrease the rate of collapse of said airbag, thereby maximizing drug utilization;

said drug delivery device admitting a drug-containing aerosol through said drug introduction opening while said collapsible airbag is at least partially expanded, said drug being introduced into said the breathing passage with the contraction of said collapsible airbag through inhalation by said patient.

4,484,578

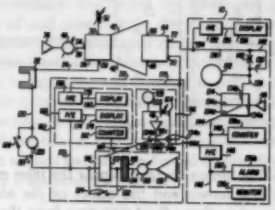
RESPIRATOR APPARATUS AND METHOD

Gerald Durkan, Altoona, Pa., assignor to Kircaldie, Randall and McNab, Conn.

Continuation of Ser. No. 210,654, Nov. 26, 1980, Pat. No. 4,457,303. This application Sep. 23, 1983, Ser. No. 535,018

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—204.24 **23 Claims**



1. A method of supplying supplemental dosages of respirating gas to a spontaneously breathing in vivo respiratory system having an inspiration period and an expiration period, said inspiration period being of duration T_2 during which period a negative pressure relative to ambient pressure exists in said in vivo respiratory system at the location whereat respirating gas is introduced to said system, said expiration period comprising a positive pressure relative to ambient pressure existing in said in vivo respiratory system at the location whereat respirating gas is introduced to said system, said method comprising the steps of:

(1) sensing initiation of said inspiration period;

(2) generating a first signal having a duration indicative of the duration T_2 of negative pressure relative to ambient pressure occuring in said in vivo respiratory system during said inspiration period;

(3) using timing means to predetermine a duration T_1 for which a dose of respirating gas is to be supplied to said in vivo respiratory system, said duration T_1 being less than the duration T_2;

(4) generating a second signal having a duration related to the duration T_1;

(5) using said second signal to control the supplying of gas to said respiratory system;

(6) supplying immediately in response to said sensed inspiration a dose of respirating gas to said in vivo respiratory system, said dose being supplied only for the duration T_1, said dose being supplied substantially at the beginning of said sensed inspiration, said dose of gas being supplied at a rate R_1, said rate R_1 being set at a value such that it produces at least as great a rise in the partial pressure of said gas in blood interfacing with said respiratory system as the continuous application of said gas at a lower rate R_2 for the duration T_2; and,

(7) automatically repeating steps (1) through (6) for a plurality of successive inspiration periods.

4,484,579

COMMISSUROTOMY CATHETER APPARATUS AND METHOD

Frank Meno, and P. S. Reddy, both of Pittsburgh, Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Filed Jul. 19, 1982, Ser. No. 399,864

Int. Cl.³ A61F *17/32*

U.S. Cl. 128—305 **11 Claims**

3. A commissurotomy catheter comprising:

(a) an elongated first lumen having an inlet end, and at least one outlet,

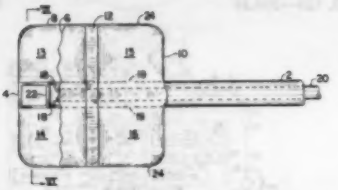
(b) a first inflatable means attached to the first lumen in a manner so that a fluid may pass from the first lumen

through an outlet and into the first inflatable means, thereby inflating the inflatable means,

(c) a second inflatable means attached to the first lumen,

(d) a second lumen having an inlet end and an outlet end and located within the first lumen so that its outlet end is connected to the first lumen near the outlet of the elongated first lumen, its inlet is near the inlet end of the elongated first lumen and the outlet of the second lumen is positioned so that a fluid may pass from the second lumen through its outlet and into the second inflatable means, thereby inflating the second inflatable means, and

(d) a cutting means attached to and extending between the first and second inflatable means.



4,484,580

SUTURING INSTRUMENT FOR SURGICAL OPERATION

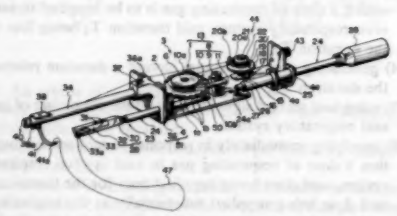
Reishi Nomoto; Masayoshi Takahashi, both of Kanagawa, and Yoshikazu Ebata, Tokyo, all of Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1981, Ser. No. 335,599

Claims priority, application Japan, Mar. 20, 1981, 56-38341[U]

Int. Cl.³ A61B 17/04

U.S. Cl. 128—340 **4 Claims**



1. A suturing instrument for surgical operations having a needle and a shuttle operated to form a needle thread and a shuttle thread supplied thereto and to interlock the needle thread and the shuttle thread so as to form lock stitches for suturing up a wound or an incision, the instrument comprising a housing having a frame; thread-supplying means including a turnable bobbin loaded with a suture-thread to be supplied to the needle and the shuttle; thread-supply control means including braking means mounted in said housing and normally pressed against said bobbin to prevent a turning movement thereof; and releasing means, said releasing means having an accessible part positioned outside of said housing, said thread-supply control means including a turnable flange mounted on said bobbin and partially extending outwards of the housing to be accessible to an operator, said flange having an outer circumference formed with a plurality of grooves; said braking means including a braking axle secured to said frame, a braker on said axle and having a portion turnably mounted in said housing and selectively engageable or disengageable in one of said grooves, and a spring normally pressing said portion against said flange, said releasing means being operated to displace said portion of said braker away from said flange to allow the turning movement of said flange and said bobbin therewith to permit the suture-thread to be drawn out from said bobbin during operation, or to displace said portion into engagement with one of said grooves to permit tightening of the suture-thread, said thread-supply control means and said releasing means being operative for adjusting the amount of the suture-thread supplied to the needle and the shuttle to a required stitching pitch so that if, after tightening, the supplied thread amount is less than the stitching pitch said flange is released by said releasing means from said braker and the bobbin is allowed to turn, and if the supplied thread amount is more than the stitching pitch, the flange is rotated by the operator in a counter direction without being released from said braker, thereby adjusting the supplied thread amount while the needle remains in the flesh.

4,484,581

ANEURYSM CLIP

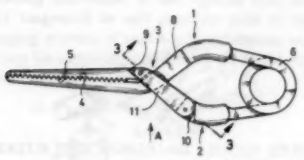
Fritz Martin, Rietheim-Weilheim; Konrad Laufer, Leibertingen-Altheim, and Arnold Ackermann, Rietheim-Weilheim, all of Fed. Rep. of Germany, assignors to AESCULAP-WERKE AG vormals Jetter & Scheerer, Fed. Rep. of Germany

Filed Sep. 23, 1982, Ser. No. 421,967

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1981, 3139488

Int. Cl.³ A61B 17/00, 17/12

U.S. Cl. 128—346 **4 Claims**



1. Aneurysm clip comprising two arms formed of a continuous length of a resilient structural material that cross each other and are resiliently connected by spring means that is also part of said continuous length of resilient structural material, said arms bearing on their free ends opposed clamping surfaces which are pressed resiliently against each other by said spring means pivoting the arms apart in a plane in the area behind their cross-over point, and further comprising a guide means in the area where the two arms cross, said guide means including a guide plate extending parallel to one arm in the area where the arms cross and maintaining such a distance from said one arm that the other arm is guided between said guide plate and the first arm so that the two arms cannot move apart perpendicular to said plane defined by the arms in the area where they cross vertically to the plane defined by the arms, said first arm (1) having a first recess in the area (3) where the arms cross to define a pair of planar bearing surfaces (9,10) that are set back relative to the outer profile of said one arm (1) by substantially the thickness of said guide plate (11), and said first arm (1) also having a second recess (7) corresponding to the width of the other arm (2), said guide plate (11) bridging said second recess (7) with the faces of the end portions of said guide plate each resting flatly on one of said bearing surfaces (9,10) and means for fixedly attaching said guide plate end portions to said bearing surfaces.

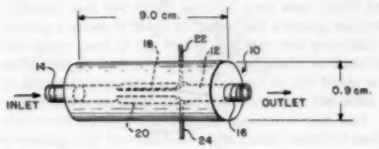
4,484,582
ELECTROLYTIC FLUID FLOW RATE METHOD AND APPARATUS

David A. Rottenberg; Saul Miodownik, both of New York, N.Y., and William E. Epifanio, II, Stamford, Conn., assignors to Memorial Hospital for Cancer & Allied Diseases, New York, N.Y.

Continuation-in-part of Ser. No. 300,535, Sep. 9, 1981, abandoned, which is a continuation of Ser. No. 112,472, Jan. 16, 1980, abandoned. This application Sep. 15, 1981, Ser. No. 301,165

Int. Cl.³ A61B *5/05*

U.S. Cl. 128—630 **12 Claims**



1. A device for measuring the flow rate of an electrolytic fluid, comprising:

a flow cell including means forming a flow channel with a cylindrical surface for receiving the fluid and a pair of spaced apart electrodes conformed to the cylindrical surface of the flow channel and flush therewith for contact with the fluid, the electrodes comprising electrically conductive material which is inert to the fluid and having a geometry comprising the distance they are spaced apart, their circumferential width about the cylindrical surface to which they are conformed, and their range along the flow channel;

pulse means applying across the flow cell electrodes a train of monopolar pulses having an amplitude, period and pulse width selected in relation to the geometry of the electrodes for effecting an impedance across the electrodes which is inversely proportional to the flow rate of the fluid, the pulse means including means for varying the current of the train of monopolar pulses applied across the electrodes in a given unit of time in response to control signal applied thereto; and

means for producing the control signal in proportion to the potential across the electrodes in an immediately-preceding given unit of time, for applying the control signal to the means for varying the current in a way to increase the current in response to an increase in the flow rate, whereby the control signal is stabilized, and for providing the control signal as a measurement representative of the flow rate.

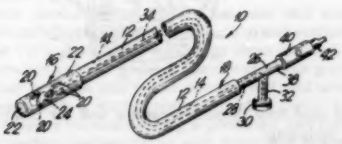
4,484,583
ESOPHAGEAL STETHOSCOPE

John R. Graham, 14 Lee Ave., White Plains, N.Y. 10606

Filed May 26, 1981, Ser. No. 267,046

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—671 **7 Claims**



1. An esophageal stethoscope comprising a flexible plastic tube of a particular length and having a first bore extending over said length, said tube having a distal end for insertion in the esophagus of a patient and a proximal end opposite said distal end wherein said first bore audibly conducts breath and heart sounds produced in the vicinity of said distal end through said tube for monitoring at said proximal end, an audio transducer element mounted at said distal end of said tube for detecting the breath and heart sounds and providing output signals representative of the breath and heart sounds as produced only in the vicinity of said distal end, said audio transducer element being arranged in said tube so that said output signals are substantially unaffected by vibrations produced over the length of said tube outside the vicinity of said distal end, terminal means at the proximal end of said tube for providing said output signals for further processing, connecting means arranged in said tube and coupled to said audio transducer element for connecting said audio transducer element to said terminal means, and fitting means communicating with said first bore of said tube at said proximal end for enabling the heart and breath sounds audibly conducted by said first bore to be monitored by a stethoscope earpiece.

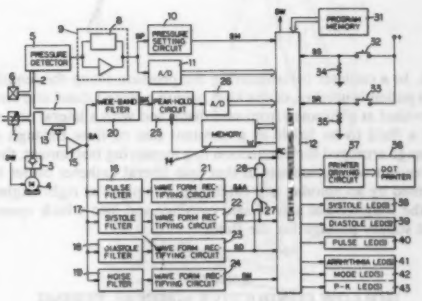
4,484,584
METHOD AND APPARATUS FOR BLOOD PRESSURE MEASUREMENT

Masahiro Uemura, Komaki, Japan, assignor to Nippon Colin Co., Ltd., Komaki, Japan

Filed Feb. 8, 1982, Ser. No. 346,769

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—680 **11 Claims**



1. A method of measuring blood pressure of a subject through use of a cuff placed over a body part of the subject to apply a cuff pressure to a blood vessel in the body part, said method comprising the steps of:

varying said cuff pressure as a function of time, and detecting said cuff pressure and a pulse wave produced in association with said blood vessel, to take repeated readings of said cuff pressure and said pulse wave;

determining and recording a first and a second level of said cuff pressure as a systolic and a diastolic blood pressure, respectively, by analyzing said repeated readings of said cuff pressure and said pulse wave;

providing a visible indication of values of said repeated readings of the pulse wave as a function of said cuff pressure, in the form of a two-dimensional graph representing said cuff pressure as a first variable along a first axis, and varying magnitudes of said pulse wave as a second variable along a second axis;

attaching two marks to said graph at positions along said first axis, thereby indicating said first and second levels of the cuff pressure respectively determined as said systolic and diastolic blood pressures; and

checking the recorded data of said first and second levels of the cuff pressure for validity thereof as to represent said systolic and diastolic blood pressures, by analyzing the positions of said two marks with respect to the indicated readings of the pulse wave magnitudes against a known characteristic of variations in the pulse wave magnitude in relation to the transition of the cuff pressure through the systolic and diastolic pressure levels.

4,484,585

CATHETERS

Manfred Baier, Bretten-Diedelsheim, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed Sep. 2, 1982, Ser. No. 414,299

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1981, 8126671[U]

Int. Cl.³ A61M *25/00*; A61B *5/10*

U.S. Cl. 128—748 **7 Claims**

1. In a catheter for measuring the pressure along the length of a patient's urethra, of the kind having a closed distal end and provided at a distance from said distal end with a lateral outlet for a fluid to be fed in at a constant rate of flow through a passage arranged for connection to a measuring instrument, the invention which consists in that said lateral catheter outlet is formed by an annular gap extending in a plane at right angles to the longitudinal axis of said catheter and into which opens said supply passage for the fluid.

4,484,586

HOLLOW CONDUCTIVE MEDICAL TUBING

Robert L. McMickle; James T. Rumbaugh, and Robert L. Netsch, all of Spirit Lake, Iowa, assignors to Berkley & Company, Inc., Spirit Lake, Iowa

Continuation-in-part of Ser. No. 382,568, May 17, 1982, abandoned. This application Nov. 1, 1982, Ser. No. 438,057

Int. Cl.³ B29D *23/05*

U.S. Cl. 128—786 **8 Claims**

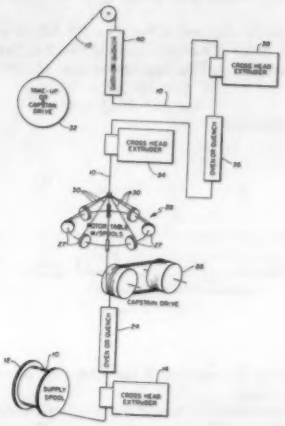
1. A continuous process of forming a plurality of conductive body implantable leads each having a lumen of tight inside dimensional tolerances, comprising the steps of:

providing a continuous core material;

extruding a first layer of body-compatible non-conductive plastic material onto the core;

winding a plurality of electrical conductors on the coated core such that each conductor forms a helix physically separated from each other conductor, the positioning and orientation of the conductors prior to being wound onto the coated core being evenly distributed about the circumference of the wire thereby to balance the tension forces applied to the structure as the conductors are wound;

extruding a coating over the electrical conductors and said coating with a second coating of body-compatible non-conductive plastic material, said second coating being compatible with said first coating and electrically insulating the individual conductors of such helix from each other;



cutting the coated and conductive core material into lengths; and

removing the core material from the first layer of plastic material.

4,484,587

AXIAL-FLOW THRESHER-SEPARATOR UNIT FOR COMBINE HARVESTERS

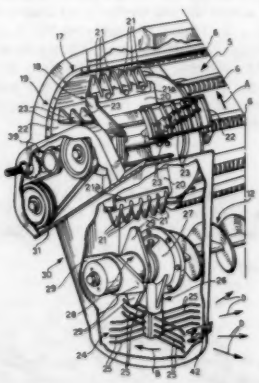
Giuseppe Raineri, Bassano del Grappa, Italy, assignor to Pietro Laverda S.p.A., Italy

Filed May 26, 1983, Ser. No. 498,440

Claims priority, application Italy, Jun. 9, 1982, 67737 A/82

Int. Cl.³ A01F *12/40, 29/02*

U.S. Cl. 130—27 T **3 Claims**



1. An axial-flow thresher-separator unit for combine harvesters, including:

a thresher-separator cylinder having external longitudinal bars;

a thresher concave constituted by a concave grille located below the thresher-separator cylinder and partially sur-

rounding a part of said cylinder adjacent the loading end of the unit, and

a separator casing constituted by a perforated tubular body which surrounds that part of the thresher-separator cylinder not covered by the thresher concave to define a space, and is provided with internal helical ribs adapted to cooperate with the bars of the thresher-separator cylinder to cause the advance of a harvested product along a helical path towards the discharge end of the unit in the space between the thresher-separator cylinder and the separator casing,

wherein the improvements consist in the thresher-separator unit further including:

a cutter unit at its discharge end, comprising a cutter member fixed to the discharge end of the thresher-separator cylinder and provided with at least one radial bracket having a series of blade sections, and a casing surrounding the upper part of the cutter member and provided internally with at least one series of fixed blade sections located in alternating positions with respect to the blade sections of the cutter member for cooperation with the latter to cut the straw leaving the thresher-separator unit, and

a spreading reel located below the cutter member and rotatable about a vertical axis to spread the cut straw uniformly on the ground.

4,484,588

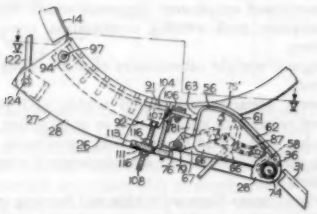
COMBINED CONCAVE AND ROCK DOOR STRUCTURE

Michael L. Huhman, Kansas City, and Michael R. Stuber, Raytown, both of Mo., assignors to Allis-Chalmers Corp., Milwaukee, Wis.

Filed Mar. 26, 1984, Ser. No. 593,698

Int. Cl.³ A01F *12/10, 12/16*

U.S. Cl. 130—27 JT **11 Claims**



1. In an agricultural harvester having a threshing section, a threshing rotor mounted in the threshing section for rotation about a rotor axis, and a feeder conveyor operable to deliver crop material to the rotor by way of a feeder opening in the threshing section, the combination comprising:

a pair of laterally spaced vertical walls at opposite sides of said feeder opening,

a combined concave and rock door structure including

a pair of laterally spaced and longitudinally extending arms pivotally connected at their forward ends to said vertical walls, respectively, adjacent said feeder opening for vertical swinging movement about a transverse swing axis generally parallel to said rotor axis,

a transverse brace rigidly secured to and extending between said arms at longitudinally intermediate points thereof,

a rock door disposed laterally between said arms and pivotally connected at its front end to said vertical walls for vertical swinging movement about said swing axis between a closed position wherein said door provides a floor between said feeder opening and said transverse brace and a downwardly extending open position wherein a vertical opening is presented, said rock door extending rearwardly to said transverse brace in its closed position,

latch means releasably securing said door in its closed position, said latch means being operable to release said door, permitting it to swing to its open position, when said door is subjected to a predetermined downward force, and

a concave mounted on said arms and extending rearwardly from said transverse brace, said concave having a plurality of longitudinally spaced transverse bars in confronting relation to said rotor, and

control mechanism on said harvester connected to said structure operable to pivotally adjust the position of the latter about said swing axis thereby changing the threshing clearance between said rotor and said concave.

4,484,589

DISTRIBUTOR FOR A ROD MAKING MACHINE FOR THE PRODUCTION OF SMOKERS' ARTICLES

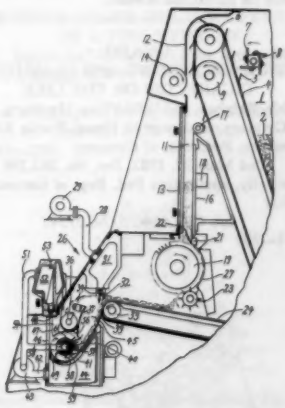
Wolfgang Steiniger, Börnsen; Dietrich Bardenhagen, Hamburg, and Guido Quarella, Escheburg, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. K.G., Hamburg, Fed. Rep. of Germany

Filed Jun. 28, 1982, Ser. No. 392,776

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1981, 3145989

Int. Cl.³ A24C *5/39*

U.S. Cl. 131—110 **9 Claims**

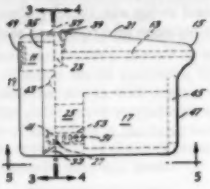


1. In a machine for the production of cigarettes or analogous rod-shaped smokers' articles having fillers of tobacco or other particulate material, a distributor comprising a source of particulate material; a rotary drum-shaped accelerating conveyor defining an internal suction chamber and having openings connecting said suction chamber with the surrounding atmosphere, said conveyor being spaced apart from said source; pneumatic conveyor means for delivering to said accelerating conveyor particulate material from said source in a gaseous carrier medium whereby the accelerating conveyor segregates at least a substantial percentage of the gaseous carrier medium from particulate material by drawing the carrier medium into said chamber via said openings and propels the segregated particulate material in a predetermined direction; and a stream forming conveyor arranged to receive the propelled particulate material.

4,484,590
PIPE WITH TOBACCO STORAGE

Prithvi P. Singh, 6101 Sheridan East Unit 22D, Chicago, Ill. 60660

Filed Feb. 1, 1982, Ser. No. 344,836
Int. Cl.³ A24F 1/26
U.S. Cl. 131—180 12 Claims



1. A pipe comprising:

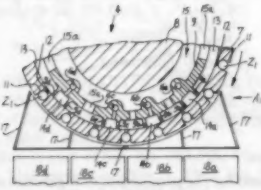
body member means including a smoke drawing passageway; a mouthpiece connected to said smoke drawing passageway; a storage compartment adjacent said smoke drawing passageway; and a filler opening leading from said storage compartment; and

tobacco burning means including a slide member having means for sliding exclusively in a rectalinear fashion, said tobacco burning means having a bowl in slidable engagement with said body member means; and a plurality of position indicators on said slide member; wherein said bowl is slidably positionable to access said smoke drawing passageway and said filler opening from said storage compartment on an exclusive basis.

4,484,591
METHOD OF TESTING AND CLASSIFYING CIGARETTES OR THE LIKE

Günter Wahle, Reinbek, and Willi Filter, Hamburg, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Mar. 29, 1982, Ser. No. 363,394
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1981, 3115021
Int. Cl.³ A24C 5/34, 5/345
U.S. Cl. 131—280 19 Claims

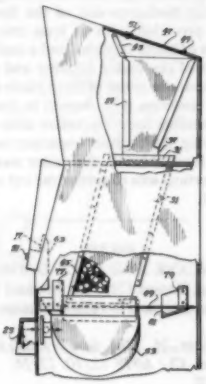


1. A method of testing and classifying cigarettes or analogous rod-shaped articles which constitute or form part of smokers' products, comprising the steps of subjecting the articles at a first station to a plurality of different tests each of which involves monitoring the articles for the presence or absence of one of a variety of defects and generating different defect signals on detection of the respective defects so that each of said different defect signals denotes a different type of defect; transporting the tested satisfactory and defective articles from said first station along a common path toward a second station for accumulation of defective articles; delaying the defect signals for intervals of time corresponding to those required to transport the respective defective articles from said first to said second station; and segregating the defective articles from satisfactory articles in said common path in response to the delayed defect signals.

4,484,592
AMUSEMENT APPARATUS WITH HIGH CAPACITY TOKEN STORAGE

Walter M. Burnside, Waukegan, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.

Continuation of Ser. No. 153,013, May 27, 1980, abandoned.
This application May 21, 1982, Ser. No. 380,829
Int. Cl.³ G07D 1/00; G07F 17/34
U.S. Cl. 133—5 R 5 Claims



1. Coin-released amusement apparatus which dispenses tokens in response to a winning combination, comprising, in combination;

an elongated upright substantially closed housing having a top end,

amusement apparatus supported within said housing in spaced relation to said top end so as to define an upper chamber within said housing, said amusement apparatus being operative to provide a predetermined winning combination,

coin-release means disposed within said housing and having a coin receptor mechanism responsive to insertion of a coin for activating the apparatus,

repository means adapted to receive coins diverted directly thereto from said coin-release means,

token storage and dispensing means within said housing separate from said coin-release and repository means and adapted to store a supply of tokens and dispense selected quantities of tokens in response to said predetermined winning combination, said token storage and dispensing means including an upper storage bin disposed within said upper chamber above said amusement apparatus, said bin having an open upper end and being tapered downwardly to a discharge opening such that coins disposed within said bin gravitate toward said opening,

a channel disposed within said housing and extending generally longitudinally of said housing alongside the amusement apparatus, said channel having an upper end adjacent said opening in said bin so as to receive tokens therefrom and having a volumetric capacity sufficient to receive a substantial quantity of tokens therein,

a downwardly inclined hopper disposed within said housing and having communication with the lower end of said channel so as to receive tokens therefrom and enable downward gravitational movement of tokens within said hopper,

an automatic token ejector connected to and forming one generally upright wall of said hopper downstream from the token receiving end thereof, said automatic token

ejector being operative in response to said winning combination to dispense one or more tokens in controlled quantities from the hopper through a discharge opening in said housing for access by a player,

access means in the top of said housing overlying said upper open end of said bin to facilitate replenishing of tokens within said token storage and dispensing means without interrupting play of the amusement apparatus,

and means including a longitudinally movable blocking member at the lower end of said channel and cooperative with said channel to selectively obstruct gravity feed of tokens from said bin and channel to said hopper so as to enable removal of said hopper and dispensing means from beneath said channel for service without tokens in said bin and channel passing therefrom.

4,484,593

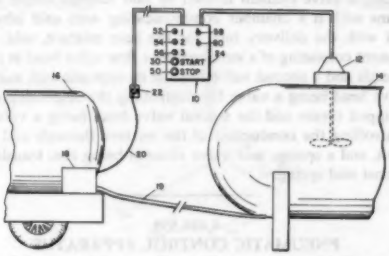
AUTOMATIC MILK BULK TANK LOCKOUT SYSTEM AND METHOD OF USING SAME

Merton Russell, Rte. 1, Box 319, Endeavor, Wis. 53930

Filed Jul. 2, 1982, Ser. No. 394,619

Int. Cl.³ B67D *5/02*

U.S. Cl. 137—1 **22 Claims**



1. An automatic milk bulk tank lockout system (**10**) for use with a milk agitator (**12**) in a stationary bulk tank (**14**) and a pump (**18**) in a milk tank truck (**16**) for pumping milk out of the bulk tank (**14**), the lockout system (**10**) comprising:

an electrical receptacle (**22**) to supply power to the pump (**18**); and, as a substantially unitary installation adapted to be mounted remote from the milk tank truck (**16**):

means for activating the milk agitator (**12**) for a selected, timed agitating period; and

means for selectively activating the receptacle (**22**) in automatic coordination with the milk agitator (**12**) so as to deactivate the receptacle (**22**) throughout the agitating period and then to activate the receptacle (**22**), whereby the pump (**18**) is not powered and milk cannot be pumped out of the bulk tank (**14**) before expiration of the selected agitating period.

4,484,594

FREEZE GUARD VALVE

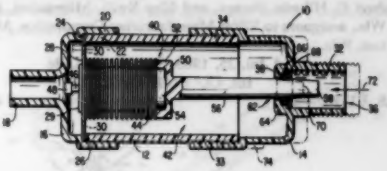
Roy Alderman, 2402 South St., Beaumont, Tex. 77702

Filed Jun. 24, 1983, Ser. No. 507,498

Int. Cl.³ E03B *7/12*; **F16L** *55/00*

U.S. Cl. 137—62 **10 Claims**

1. A freeze valve device for connection to a water conduit to protect said conduit from damage due to freezing water in said conduit, comprising: a cylindrical body member having an end cap attached at either end to define a chamber; a retainer washer plate secured to one end of said body member adjacent one of said end caps and extending across the width of said chamber, said one end cap having an opening therein and said retainer washer plate having at least one aperture therein for passage of fluid; the other end cap being threadedly attached to the adjacent end of said body member to allow axial adjustment of said other end cap relative to said cylindrical body member, said other end cap having an opening therein with a valve seat for coacting with a valve element to vary the amount of water through the opening in said other end cap as said other end cap is movably adjusted along said cylindrical body member to position said valve element relative to the valve opening; a bellows assembly secured within the valve chamber on the retainer washer plate for aligning said bellows assembly with said valve seat, said bellows assembly having a bellows which is capable of being charged with a fluid to a



longitudinally expanded condition and also capable of contracting longitudinally as said fluid contracts under reduced temperature conditions; a valve element secured to the bellows which is directly aligned with the opening in said other end cap as said other end cap is moved along said cylindrical body member, said valve element having a stem which extends longitudinally from said bellows through the opening in said other end cap and coacting with said valve seat to close said opening to fluid flow when the bellows is in an expanded condition.

4,484,595

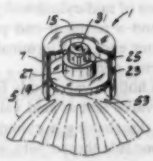
TAMPER-PROOF COVER FOR THE OPERATING NUT OF A FIRE HYDRANT

Kenneth F. Vanek, 567 Crestview, East Alton, Ill. 62024, and Joseph S. Dooling, 507 N. Woodriver Ave., Woodriver, Ill. 62095

Filed Apr. 2, 1984, Ser. No. 596,045

Int. Cl.³ E03B *9/06, 9/14*

U.S. Cl. 137—296 **17 Claims**



1. A tamper-proof cover for the operating nut of a fire hydrant, the hydrant including a standpipe and a bonnet at the top of the standpipe, the operating nut extending upwardly from the bonnet, said cover comprising:

a housing adapted to be positioned on the bonnet over and around the operating nut so that the operating nut is substantially concealed, said housing having an internal flange which extends radially outwardly into the housing;

operating member having an opening therein for receiving the nut, said opening having a shape generally corresponding to that of said nut for preventing relative rotation between said operating member and the operating nut when said operating member is on the nut, said member being adapted to be placed on the operating nut within said housing; and

means for securing said operating member against removal from the operating nut, said flange of the housing having an opening for receiving at least a portion of the operating member therein and being engageable with the operating

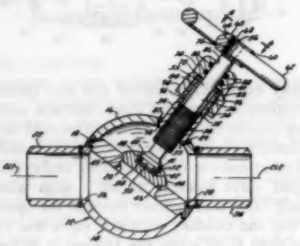
member when the latter is secured to the nut for preventing removal of the housing from the bonnet.

4,484,596

MEANS FOR SECURING VALVE DISC TO VALVE SPINDLE

Robert C. Hikade, Sussex, and Glen Swift, Milwaukee, both of Wis., assignors to Vilter Manufacturing Corporation, Milwaukee, Wis.

Filed Jul. 25, 1983, Ser. No. 516,686
Int. Cl.³ F16K *43/00*
U.S. Cl. 137—315 5 Claims



1. A valve comprising: a hollow valve body; a member in said hollow valve body having a passage therein for passage of fluid therethrough and having a portion around said passage defining a valve seat;

a hollow valve sleeve connected to said valve body and communicating through a hole in siad valve body with the interior of the latter;

an axially shiftable valve spindle extending through said hollow valve sleeve and into said hollow valve body, said valve spindle having an upper cylindrical portion at its inner end and having an annular groove formed in the peripheral surface of said cylindrical portion between said upper portion and a terminal end portion of said valve spindle at its inner end, said terminal end portion of said valve spindle being convex;

a valve disc in said hollow valve body for releasable engagement with said valve seat as said valve spindle shifts axially, said valve disc having a cylindrical hole extending inwardly from one side thereof into which said cylindrical portion of said valve spindle is inserted, said cylindrical hole in said valve disc being of substantially the same diameter as said cylindrical portion of said valve spindle and having a bottom portion which engages an end of said valve spindle, and said valve disc further having an annular groove formed in the peripheral wall surface defining said cylindrical hole and in registry with and of the same width as said groove in said valve spindle;

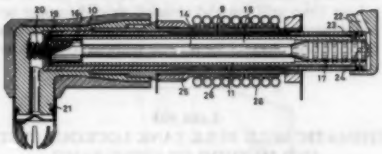
and a generally circular but non-continuous ring engaged in the registering grooves in the valve spindle and the valve disc to secure them together, said cylindrical hole in said valve disc being outwardly flared at the end thereof through which said valve spindle is inserted to facilitate insertion of said ring said terminal end portion engaging said bottom portion of said cylindrical hole in said valve disc to allow said upper portion of said valve spindle to engage said non-continuous ring and to enable said non-continuous ring to expand outwardly of said annular groove in said valve spindle into said annular groove of said valve disc to fixedly maintain said valve spindle within said valve disc against any axial movement.

4,484,597

HOMOGENIZER DEVICE, IN PARTICULAR FOR THE PRODUCTION OF WHIPPED CREAM

Francesco Bravo, Montecchio Maggiore, Italy, assignor to Bravo S.p.A., Italy

Filed Nov. 19, 1982, Ser. No. 443,151
Claims priority, application Italy, Nov. 26, 1981, 23634/81[U]
Int. Cl.³ F16K *21/04;* B01F *5/06*
U.S. Cl. 137—512.1 3 Claims



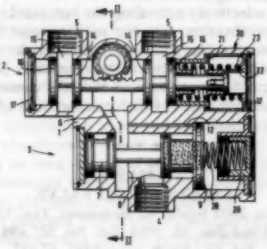
1. A homogenizer device, in particular for the production of whipped cream, comprising, in combination, a delivery tube, an external sleeve, an internal sleeve having teeth on the outside thereof to form a convoluted labyrinth with said external sleeve, a valve element housed by said internal sleeve which forms with it a chamber communicating with said labyrinth and with the delivery tube for the base mixture, said valve element consisting of a stem bearing a first valve head at one of its ends and a second valve head at its opposite end, said first valve head being a valve for controlling the dispensing of the whipped cream and the second valve head being a valve for controlling the conduction of the mixture through said labyrinth, and a spring, said valve element being also translatable against said spring.

4,484,598

PNEUMATIC CONTROL APPARATUS

Werner Reiffert, Bochum; Dieter Peters, Witten, and Joachim Wiendahl, Dortmund, all of Fed. Rep. of Germany, assignors to J. D. Neuhaus, Witten, Fed. Rep. of Germany

Filed Jun. 7, 1982, Ser. No. 385,878
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1981, 8117890[U]
Int. Cl.³ F16K *31/12*
U.S. Cl. 137—613 4 Claims



1. A pneumatic control apparatus for operating control of various types of pneumatic devices comprising:

a single unitary housing having a pair of cylindrical valve receiving cavities formed therein;

an enlarged passage formed in said housing, said passage interconnecting and placing said cavities in communication with each other;

a cylindrical reciprocable shut-off reversing valve slidably mounted within one of said cavities for selectively shutting off and supplying a flow of compressed air to the pneumatic device, said valve having a centering device

connected thereto to normally center said valve in the flow shut-off position within said one cavity;

a manually engagable hand lever carried by said housing and exposed exteriorly of said housing, said lever being connected to reciprocate said shut-off reversing valve away from said normal centered position; and

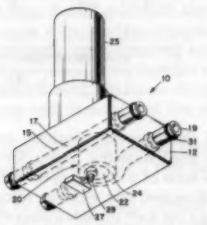
a cylindrical reciprocable pressure reducing valve slidably mounted within the other of said cavities for restricting the pressure to a predetermined preselectable value, said pressure reducing valve having a shut-off member cooperable with a sealing edge of said other cavity disposed at said enlarged passage and a control piston connected with said member, one face of said piston being communicated to said enlarged passage to control movement of said shut-off member relative to said sealing edge.

4,484,599

PINCH-TYPE PRESSURE- OR FLOW-REGULATING VALVE

Barry K. Hanover, and Stephen C. Jacobsen, both of Salt Lake City, Utah, assignors to Organon Teknika Corporation, Oklahoma City, Okla.

Filed Sep. 23, 1983, Ser. No. 535,356
Int. Cl.³ F16K *7/06*; F17D *3/01*
U.S. Cl. 137—636.1 **17 Claims**



1. A pinch-type shut-off, pressure- or flow-regulating valve comprising:

a valve body having at least one hole therethrough for placement of tubing,

a flexible tube located in said at least one tube in said valve body,

an eccentric including a substantially cylindrically shaped body, said eccentric located in said valve body and adjacent said flexible tube, a shaft projecting from one side of said cylindrically shaped body, said shaft being offset from the center of said cylindrically shaped body,

a motor attached to said shaft, whereupon activation of said motor, said eccentric will move to pinch off said flexible tube by pressing said tube against the opposite side of said valve body, said eccentric further including a round rigid sleeve freely rotatably received about the outer curved portion of said cylindrically shaped body as said cylindrically shaped body rotates, and said sleeve directly engaging said tube, whereby longitudinal stress on said tube from said eccentric is substantially alleviated.

4,484,600

SWIVEL SPOUT CONSTRUCTION FOR A FAUCET

Donald W. Peterson, Fairview Park, and Susan K. Nimon, Cleveland, both of Ohio, assignors to Streamway Corporation, Middleburgh Heights, Ohio

Filed Jan. 27, 1982, Ser. No. 343,208
Int. Cl.³ E03C *1/04*
U.S. Cl. 137—801 **14 Claims**

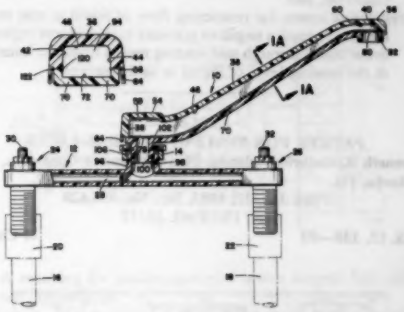
1. A swivel spout construction for a faucet and the like comprising in combination:

a composite spout, said spout defined by an elongated generally U-shaped shell having end walls, sidewalls and an upper wall and a shell sealing flange, said shell sealing flange forming a closed loop;

an elongated plate having a bottom wall and a plate sealing flange which is contiguous with said shell sealing flange and in sealing engagement therewith;

said shell further including a skirt portion surrounding and overhanging said shell sealing flange, wherein a recess is formed between said skirt portion and said shell sealing flange, said recess adapted to receive any excess material resulting from the bonding of said shell sealing flange to said plate sealing flange;

said end walls, sidewalls and upper and bottom walls defining a waterway;



inlet aperture means and outlet aperture means at respective ends of said plate to facilitate the entry and discharge of water into and out of said waterway;

a hollow cylindrical spud integral with said plate and extending from said bottom wall of said plate at said inlet aperture means, said spud having a retaining ring groove in the external surface thereof;

a retaining ring received in said groove;

a faucet underbody having means to receive hot and cold water and a cylindrical bore for receiving said spud;

sealing means between said bore and said spud; and,

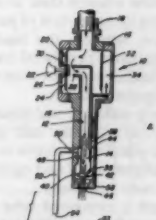
retaining means for engaging said ring and for securing said spud to said faucet underbody.

4,484,601

LIQUID LEVEL CONTROL DEVICE

Daniel N. Campau, 656 Duxbury Ct., SE., Grand Rapids, Mich. 49506

Filed Aug. 2, 1982, Ser. No. 404,070
Int. Cl.³ F15C *1/10*
U.S. Cl. 137—805 **16 Claims**



1. A liquid level control device for controlling the flow of liquid into a reservoir, storage tank or the like, comprising:

nozzle means including fluid amplifier means having inlet means for developing a substantially laminar liquid power stream, outlet means spaced from said inlet means, signal

port means exposed to said liquid power stream for generating a positive fluid pressure to appropriate control means supplying liquid in the presence of said laminar stream, and an access region to said liquid power stream;

sensing means remote from said nozzle means and in communication with said access region, said sensing means being responsive to the static presence of the interface at a sensing level of liquid in said reservoir to communicate liquid to said access region for physically contacting said substantially laminar power stream to alter said laminar stream to a substantially turbulent flow pattern which disrupts the pressure generating ability of said fluid amplifier means and thereby stops the supply of liquid in response to the remote sensing of a level of liquid in said reservoir; and

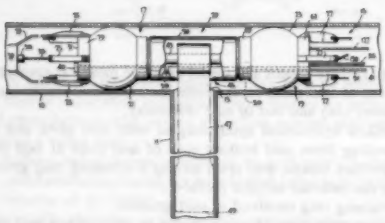
restricting means for restricting flow of liquid at said outlet means to create a negative pressure in said access region to draw liquid through said sensing means from the interface at the sensing level of liquid in said reservoir.

4,484,602

PACKER FOR SEALING LATERAL LINES

Kenneth R. Guthrie, Orlando, Fla., assignor to Cues, Inc., Orlando, Fla.

Filed Jan. 17, 1983, Ser. No. 458,628
Int. Cl.³ F16L *55/12*
U.S. Cl. 138—93 **22 Claims**



1. A pipe sealing apparatus for use in detecting and sealing leaks in a branch pipe extending generally transversely from a main pipe, the main and branch pipes meeting at a flow communication interface in the form of a peripheral opening in the main pipe, said apparatus comprising:

an elongated member having a longitudinal axis and adapted to be translated longitudinally through the main pipe, said elongated member having a pair of axially spaced hollow end sections and a hollow intermediate section disposed between said end sections, said intermediate section having a pheripheral egress opening defined therein;

selectively inflatable bladder means disposed peripherally about each of said end sections, said bladder means having a deflated condition wherein their transverse cross-section is smaller then the cross-section of said main pipe, and an inflated condition wherein the bladder means are expanded into continuous peripheral contact with the main pipe to define a sealed space between the end sections and about said intermediate section;

means for selectively inflating said bladder means;

means for selectively rotating said intermediate section about said longitudinal axis relative to said end sections to permit angular alignment of said egress opening with said flow communication interface;

a selectively inflatable elongated tube secured at one end within said intermediate section and having a collapsed condition wherein the tube resides substantially entirely within said intermediate section, and an inflated condition wherein said tube projects transversely of said intermediate section through said egress opening in said intermediate section and into said branch pipe when said egress opening and said flow communication interface are angularly aligned, said tube having a distal portion in its inflated condition which is expanded against the branch pipe to seal a section of the branch pipe through which the tube extends;

means for selectively inflating said tube; and

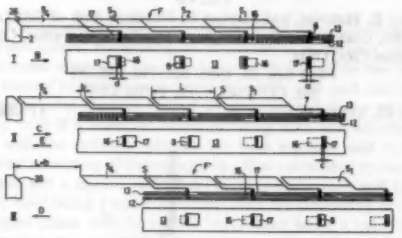
means for selectively injecting fluid into the sealed space of the main tube and the sealed section of the branch tube.

4,484,603

SERIAL SHED WEAVING MACHINE WITH A WEAVING ROTOR

Alois Steiner, Rieden, Switzerland, assignor to Sulzer-Ruti Machinery Works Ltd., Ruti, Switzerland

Filed Feb. 1, 1983, Ser. No. 463,022
Claims priority, application Switzerland, Feb. 19, 1982, 1039/82
Int. Cl.³ D03D *47/30, 41/00*
U.S. Cl. 139—11 **18 Claims**



1. A serial shed weaving machine, comprising a weaving rotor having shed retaining means for disposing the warp threads in the form of traveling open warp sheds which travel in the warp direction, said weaving rotor having guide channels for guiding the weft threads transported by a flowing fluid through said open warp sheds, each of said guide channels including a plurality of axially elongated tubular channel elements, each of the channel elements having a weft exit passage therethrough and being movably mounted with respect to the other channel elements, each of said channel elements having an axial length which is substantially greater than the axial length of the shed retaining means, each of the channel elements being configured at its forward and rearward ends with respect to the weft insertion direction such that when the channel elements of a respective guide channel are positioned for weft insertion the elements form a continuous closed guide channel, and means for moving the channel elements back and forth in the weft insertion direction such that when the channel elements are moved in a first direction the closed guide channel is opened to develop gaps between adjacent channel elements and each channel element is moved out of its corresponding part of the warp shed, and when the channel elements are moved in a second direction each channel element is moved into its corresponding part of the warp shed and the guide channel is closed, the total excursion of each channel element in one direction being at least equal to its length in the weft insertion direction.

4,484,604

COMPOSITE DUAL-FACE HEDDLE FRAME SLAT

Charles F. Kramer, Greenville, S.C.; Richard A. Willard, Buffalo, and Lawrence Kocher, Tonawanda, both of N.Y., assignors to Steel Heddle Mfg. Co., Greenville, S.C.

Filed Sep. 6, 1983, Ser. No. 529,264
Int. Cl.³ D03D *9/00*
U.S. Cl. 139—92 **15 Claims**

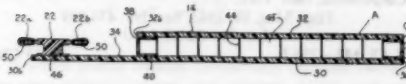
1. In a heddle frame assembly for a loom of the type which includes upper and lower frame slats vertically spaced by side frame members, heddle rods carried by said frame slats be-

tween which heddles are supported in the frame, and a drive connector means by which said heddle frame is operatively connected to a drive means for reciprocating the heddle frame up and down in a shedding motion, wherein said heddle frame slat comprises:

an elongated long-wall face plate extending generally the entire length of said heddle frame assembly having a top edge and a bottom edge;

an elongated short-wall face plate extending generally the length of said heddle frame assembly parallel to said long-wall face plate, said short-wall face having a top edge and a terminal edge, said terminal edge terminating short of said bottom edge of said long-wall face plate;

said short-wall face plate being spaced from said long-wall face plate and parallel thereto to define a core space therebetween:



an upper frame slat edge defined between said top edges of said long-wall and short-wall face plates and a lower frame slat edge defined between said long-wall face plate and said terminal edge of said short-wall face plate;

integral stiffening means interposed between said long-wall face plate and short-wall face plate along said upper and lower frame slat edges joining same together as an integral beam structure and stiffening said frame slat against bending and reinforcing said frame slat at the extreme fiber stress;

said long-wall face plate extending past said terminal edge of said short-wall face plate to define a free flange portion; and

a heddle rod carried by said free flange portion of said long-face of said frame slat spaced below said terminal edge of said short-wall face plate.

4,484,605

PUNCHED PAPER TAPE FEED DEVICE FOR LOOM DOBBIES

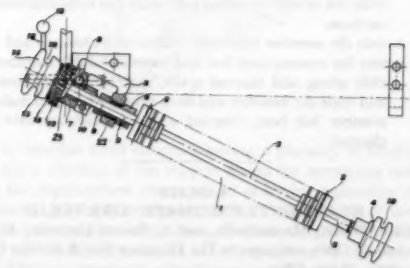
Olivo Epis, Bergamo, Italy, assignor to Fimtessile Fabbrica Italiana Macchinario Tessile SpA, Ponte Nossa, Italy

Filed Aug. 5, 1982, Ser. No. 405,362

Claims priority, application Italy, Aug. 6, 1981, 23410 A/81

Int. Cl.³ D03C *1/24*

U.S. Cl. 139—330 **6 Claims**



1. A feed device for the punched paper tape carrying the coded fabric design for loom shed formation dobbies, comprising a feed roller for the punched paper tape, a spindle carrying said roller, two end supports mounting said spindle, drive means to intermittently rotate said spindle, means to disengage said spindle from one of said supports and means to rotate said other support relative to the dobby without interrupting the connection between the drive means and the punched tape roller.

4,484,606

SILO BAG FILLING MACHINE

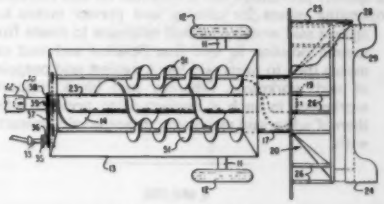
Larry J. Kosters, Sioux Center, Iowa, assignor to Roto Press Limited, Sioux Center, Iowa

Continuation-in-part of Ser. No. 317,497, Nov. 2, 1981, Pat. No. 4,412,567. This application Oct. 26, 1982, Ser. No. 435,631

The portion of the term of this patent subsequent to Nov. 1, 2000, has been disclaimed.

Int. Cl.³ B65B *3/08*

U.S. Cl. 141—114 **7 Claims**



1. A machine for loading material into a storage bag, said machine comprising:

a hopper for receiving said material from a source, said hopper having an output opening, said hopper having operably attached therein first means for moving at a first rate said material in said hopper to the output opening;

means for directing said material from said hopper to said bag, said directing means including second means for moving said material at a second rate, said directing means including means for holding said bag; and

traverse means for movably supporting said hopper and said directing means;

whereby said material is moved from said hopper to said bag, said machine moving on said traverse means as said bag fills.

4,484,607

SPLINTER PREVENTION DEVICE IN AUTOMATIC CYCLE WOODWORKING MACHINES

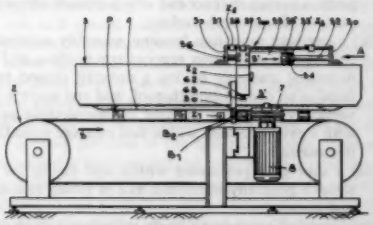
Giuseppe Gemmani, Rimini, Italy, assignor to SCM Finanziaria S.p.A., Rimini, Italy

Filed Sep. 7, 1982, Ser. No. 415,714

Claims priority, application Italy, Oct. 19, 1981, 3553 A/81

Int. Cl.³ B27F *5/00*

U.S. Cl. 144—82 **3 Claims**



1. An automatic cycle woodworking machine comprising:

at least one belt for feeding in a piece to be machined,

presser means for pressing against said workpiece,

rotating machining means for machining said workpiece when locked by said presser means, said rotating machining means making contact with said workpiece on an

ingoing side of said piece and breaking contact with said workpiece on an outgoing side of said workpiece and having a direction of rotation such that it tends to cause splintering of said workpiece as it breaks contact therewith;

carriage means mounted for movement with respect to said machine back and forth in a direction parallel to the direction in which said workpiece is fed in;

an extension mounted on said carriage means for pivoting movement between first and second positions, said extension having an extremity which when said extension is in said first position is positioned in the path along which said workpiece is fed in and when said extension is in said second position is positioned in spaced-apart relation to said path;

a splinter prevention block mounted on said extremity; and

operating means for causing said presser means to press against said workpiece, said extension to rotate from said second position to said first position and said carriage means then to press said block against said outgoing side of said workpiece, whereby said block supports said workpiece in such a manner as to prevent splintering thereof when said machining means breaks contact therewith.

4,484,608

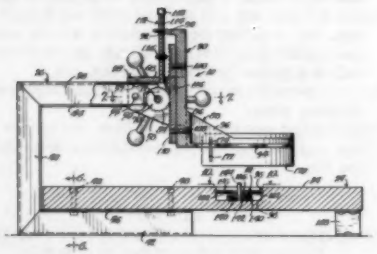
ROUTER TABLE

Irwin J. Ferdinand, Glencoe; Richard Sylvan, Glenview, and Michael Peterson, Evanston, all of Ill., assignors to Hirsh Company, Skokie, Ill.

Filed Oct. 21, 1982, Ser. No. 435,759

Int. Cl.³ B27C *5/10*

U.S. Cl. 144—134 B **20 Claims**



1. A router table for support of a portable router above a work surface, comprising:

(a) a work table having a generally horizontal upper work surface;

(b) a support arm assembly secured to said work table, said support arm assembly including an upper support arm portion having an inner end which extends above a central portion of said work surface;

(c) a carriage mounting housing assembly secured to said inner end of said upper support arm portion, said carriage mounting assembly having a dovetail shaped recess defined in an end portion thereof, said end portion having a vertically extending opening communicating said recess with a cavity defined within said carriage mounting housing assembly;

(d) a spur gear positioned within said cavity for rotation about a generally horizontal axis in facing relationship to said opening;

(e) a support carriage assembly including a dovetail shaped slide portion slidably received within said recess;

(f) a geared rack mounted to said slide portion so as to extend into said opening and mesh with said spur gear such that rotational movement of said spur gear is translated into vertical movement of said support carriage assembly;

(g) a wear surface insert positioned between said slide portion and a surface of said recess so as to facilitate controlled vertical movement of said slide portion within said recess;

(h) a bearing plate positioned between a portion of said wear surface insert and a surface of said recess;

(i) locking means for selectively applying inward pressure to said bearing plate so as to selectively clamp said slide portion within said recess and thereby prevent vertical movement of said slide portion within said recess; and

(j) a mounting means associated with said support carriage assembly for attachment of a router thereto above said work surface.

4,484,609

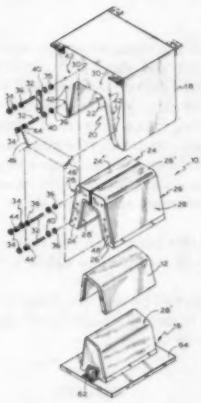
WEDGE DIE FOR PRODUCING BENT PLYWOOD

Henry J. Weaver, York, Pa., assignor to Simmons Universal Corporation, New York, N.Y.

Filed Mar. 18, 1983, Ser. No. 476,899

Int. Cl.³ B27H *1/00*

U.S. Cl. 144—256.1 **13 Claims**



1. A wedge die for shaping a workpiece into a desired configuration, comprising:

a female die including a body member having a channel defined therein, said channel having inwardly tapered opposing side walls, and first and second slidable members positioned in opposing relation within said channel and having respective external surfaces in slidable contact with one of said opposing side walls and opposing internal surfaces,

a male die member insertable within said channel; and

means for causing said first and second slidable members to slide along said tapered walls, thereby moving towards said male die member and each other, when said male die member has been inserted a certain distance into said channel.

4,484,610

HEAVY DUTY PNEUMATIC TIRE TREAD

Bill J. Wallet, Marshallville, and A. Robert Casimiro, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

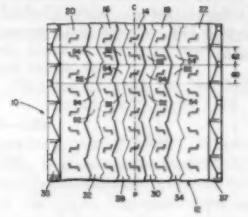
Filed Sep. 17, 1982, Ser. No. 419,334

Int. Cl.³ B60C *11/08, 11/12*

U.S. Cl. 152—209 R **7 Claims**

1. In a pneumatic radial tire for use in heavy vehicles, said tire having a tread portion and a belt layer in a crown of a tire body reinforced by a toroidal carcass extending between a pair of annular bead cores, said tread portion being formed of five continuous circumferential zig-zag ribs separated by four cir-

cumferential zig-zag grooves, the improvement comprising; said four circumferential zig-zag grooves having two center grooves and two shoulder grooves, wherein each groove is made up of successive circumferentially and obliquely alternating one-half pitches having two different lateral widths and wherein each one-half pitch is of a substantially uniform width,



each of which widths remains substantially constant throughout its circumferential extent, and wherein, within each one-half groove pitch, when viewed in the lateral direction, the lateral widths of said center grooves are of a first width whereas the lateral widths of said shoulder grooves are of a second width.

4,484,611

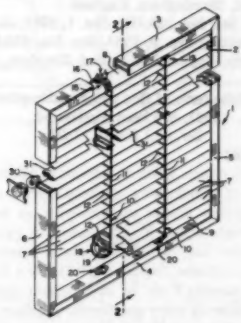
VENETIAN BLIND STRUCTURE

Richard N. Anderson, Owensboro, Ky., assignor to Hunter Douglas Inc., Totowa, N.J.

Continuation of Ser. No. 384,286, Jun. 2, 1982,. This application Dec. 30, 1983, Ser. No. 567,171

Int. Cl.³ E06B *3/32*

U.S. Cl. 160—107 **6 Claims**



1. A venetian blind structure having a plurality of tiltable slats and a plurality of slat support means for supporting said slats, the improvement characterized in having a plurality of top pivotal bearing structures extending along a length of said slats and remote from and above said slats adapted to be secured to a first frame member, in having a plurality of bottom pivotal bearing structures extending along a length of said slats and spaced remote from and below said slats adapted to be secured to a second frame member opposite said first frame member, and in having a slat support means extending from each top pivotal bearing structure and connected to a bottom bearing structure, said bearing structures each being adapted to pivot about a pivot axis being spaced remote from and extending substantially parallel to the longitudinal axes of the slats.

4,484,612

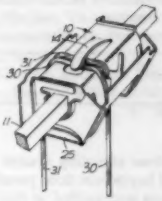
TILTING ROLL AND TILTING ROLL ASSEMBLY FOR THE LADDER MEANS OF A VENETIAN BLIND

Francis Vecchiarelli, River Edge, N.J., assignor to Hunter Douglas International N.V., Willemstad, Netherlands Antilles

Continuation of Ser. No. 320,431, Nov. 12, 1981, abandoned, which is a continuation of Ser. No. 043,797, May 30, 1979, abandoned. This application Jun. 30, 1983, Ser. No. 509,590

Int. Cl.³ E06B *9/307, 9/38*

U.S. Cl. 160—177 **2 Claims**



2. A tilting roll for cord type ladder means of a venetian blind where the ladder means comprises a pair of side cords joined by cross rungs, said tilting roll comprising, in combination:

(a) a hollow roll tiltable about its longitudinal axis;

(b) means defining a first pair of side cords engaging opening portions circumferentially spaced from one another on said roll with each opening portion adapted to receive a cord of a first pair of side cords extending circumferentially side by side over a portion of the roll to prevent axial movement of the cords with respect to the roll and where the first pair of side cords is adapted to support a first end of the blind, said first pair of opening portions being in a first plane perpendicular to said axis;

(c) means defining a second pair of side cords engaging opening portions circumferentially spaced from one another on said roll and which are axially spaced from the fist pair of side cords engaging portions adapted to alternatively receive a second pair of side cords extending circumferentially side by side over a portion of the roll to prevent axial movement of the cords with respect to the roll and where the second pair side cords is adapted to support a second end of the blind, said second pair of opening portions being in a second plane perpendicular to said axis and spaced longitudinally with respect to said first plane wherein one opening portion of the first pair of side cords engaging opening portions and one opening portion of the second pair of side cords engaging opening portions are joined to one another to form a single opening on one side only of the longitudinal axis of the roll and the other opening portions of the first pair of side cords engaging opening portions and the other opening portions of the second pair of side cords engaging opening portions are joined to one another to form a single opening on the other side only of the longitudinal axis of the roll, said single opening being each in the form of a symmetrical Y, the plane of symmetry being perpendicular to the axis of the rotation of the roll, the stems of the Y being wider than the arms and the free ends of the arms being directed away from one another in a circumferential direction over the top of the roll.

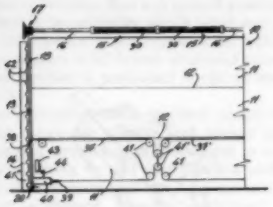
4,484,613
WIRE DRUM FOR DOOR

Walter Timoschuk, 19 Place de Bohème, Candiac, Quebec, Canada (J5R 3N2)

Continuation-in-part of Ser. No. 307,642, Oct. 1, 1981,. This application Jun. 6, 1983, Ser. No. 501,192

Int. Cl.³ E05F *11/00*

U.S. Cl. 160—193 **3 Claims**



1. An improved door elevating system for use with a door having a plurality of horizontal door panels hinged together at their horizontal edges and guided at their vertical edges between a pair of guide rails, said system comprising means to displace said door along said guide rails, said means comprising a door lifting cable disposed along a respective one of opposed vertical edges of said door, said cable being secured at one end to a bottom portion of said door, an opposed end portion of said cable being wound on a rotatable drum rotatably supported on a drive shaft and disposed in alignment with said vertical edge; said drum having an outer cable receiving surface on which said cable can be wound, a cable entry hole in said surface positioned adjacent said vertical edge of said door, a vertical outer bearing side face protecting said cable entry hole, and a free side face opposite from said cable entry hole; said free side face facing inwardly of said vertical edge of said door, a cable passage inside said drum spaced from said drive shaft and having an exit port in said free side face whereby said end of said cable exits for adjustment in an area providing easy access to said cable, adjustable fastening means to secure said cable in said passage, and a fail safety device having a pair of sensing wires each connected at one end to a respective one of said cables disposed along a respective one of said door vertical edges, said sensing wires being taut and guided by guide pulleys and connected at an opposed end to a respective strike bolt secured adjacent a respective one of said door vertical edges, said guide rails having bolt engaging means to receive and retain said bolts when said bolts are released by the slackening of said sensing wires due to loss of tension of any of said door lifting cables.

4,484,614
METHOD OF AND APPARATUS FOR STRIP CASTING

Robert E. Maringer, Worthington, Ohio, assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 148,440, May 9, 1980, abandoned. This application Jul. 6, 1982, Ser. No. 395,177

Int. Cl.³ B22D *11/06, 11/10*

U.S. Cl. 164—463 **39 Claims**

1. An apparatus for continuously casting strip material comprising:

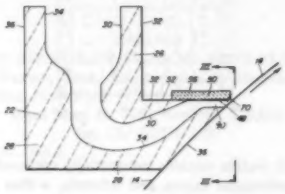
a tundish for receiving and holding molten metal having a nozzle therein through which molten metal is delivered to a casting surface movable past the nozzle at a speed of from 200 to 10,000 linear surface feet per minute,

said nozzle comprising a longitudinally extending orifice passage having substantially uniform cross-sectional dimensions throughout a longitudinal extent thereof, defined between a first inside surface and a second inside surface, an insert disposed in the tundish and movable relative to the tundish, said insert forming at least a portion of one of said inside surfaces, and a minimum gap of at least about 0.010 inch is maintained between said inside surfaces, and

said insert having a front edge surface thereof above to be disposed to within 0.120 inch of the casting surface.

29. A method for continuously casting strip material comprising:

providing a continuous surface upon which metal strip is cast from a molten metal holding tundish having a nozzle, the surface being cooled to solidify the metal and moving past the nozzle at a rate of from about 200 to about 10,000 feet per minute;



the nozzle having an orifice passage defined between first and second inside surfaces and an insert forming at least a portion of one of the inside surfaces;

moving the insert relative to the tundish to adjust the position of the insert to less than about 0.120 inch from the casting surface;

continuously delivering molten metal through the nozzle onto the moving continuous casting surface to form a continuous metal strip; and

continuously removing the cast strip from the continuous casting surface.

4,484,615
ELECTRO-MAGNETIC STIRRING

David A. Melford, Saffron Walden, and Keith R. Whittington, Great Shelford, both of England, assignors to TI (Group Services) Limited, Birmingham, England

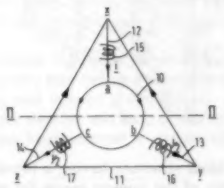
Continuation of Ser. No. 269,495, Jun. 1, 1981, abandoned. This application Sep. 9, 1983, Ser. No. 530,615

Claims priority, application United Kingdom, Jun. 5, 1980, 8018372

The portion of the term of this patent subsequent to Oct. 30, 2001, has been disclaimed.

Int. Cl.³ B22D *27/02*

U.S. Cl. 164—504 **12 Claims**



1. An apparatus for stirring a molten metal in an open topped mold comprising; a series of three or more closed loops made from bars of non-ferromagnetic electrically conductive material, these loops being positioned around the vertical axis of the mold so that a portion of each loop forms one of a ring of conductive elements surrounding the vertical axis of the mold and positioned above the mold; each of said loops being coupled inductively via an energizing coil, to a different phase of a multiphase alternating current supply, the sequence of the loops being the same as the sequence of the phases, so that currents induced in the loops will produce a magnetic field

above the mold, said magnetic field penetrating down into the mold and rotating about the vertical axis of the mold; said energizing coils being located outside the flux path of the magnetic field into the mold.

4,484,616

PROCESS FOR PREPARING SAND CORES AND MOLDS

Nancy C. Varnum, Kingsville, Mo., and John F. Kraemer, Terre Haute, Ind., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Jan. 25, 1982, Ser. No. 342,307

Int. Cl.³ B22C *1/00, 1/16*

U.S. Cl. 164—520 **7 Claims**

1. A process for preparing foundry cores and molds using an alkaline foundry aggregate and a binder therefor consisting of the steps of (a) mixing the aggregate with orthophosphoric or sulfuric acid, (b) mixing the acid-treated aggregate with an aqueous suspension of cereal flour, (c) mixing the product of step (b) with a core oil, (d) delivering the mixture to a core box or molding box and (e) heating to a temperature and for a period of time sufficient to polymerize the core oil.

4,484,617

METHOD OF USING AND STORING ENERGY FROM THE ENVIRONMENT

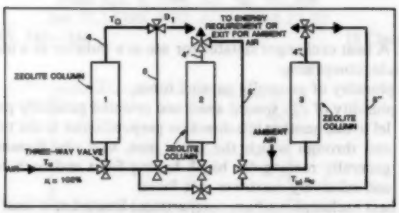
Rudolf Sizmann, Munich, Fed. Rep. of Germany, assignor to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Jun. 11, 1981, Ser. No. 272,525

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1980, 3022583

Int. Cl.³ F28D *21/00*

U.S. Cl. 165—1 **14 Claims**



1. In a method of storing or using energy from the environment using a storage medium which works by means of chemical reactions or sorptions, in which during charging with energy, exergy of imbalances of temperature or humidity of the environment is accumulated in said storage medium by desorption of a volatile constituent, which is sorptively bound to said storage medium, by an inert gaseous carrier medium, said carrier medium containing none or substantially none of said sorbable volatile constituent but collecting said bound volatile constituent when said carrier medium is passed through said storage medium; or in which during discharging stored energy the stored exergy is extracted from the store as required for conversion into heat or cold of the desired level by passing an inert gas current charged with a sorbable constituent in a higher concentration than in said desorption step through the desorbed storage medium, the improvement wherein:

(a) on charging with energy, said inert gaseous carrier medium, before being introduced into said storage medium, is first passed through a working medium which is comparatively free of sorbable constituent so that the sorbable constituent content of said carrier medium is further reduced, and a branch current of said carrier medium freed of said sorbable constituent is used for energy charging of another portion of said working medium and the remaining branch current of said carrier medium is used for desorption of said storage medium, or

(b) on discharging energy, the residual exergy contained in the emerging gaseous inert carrier medium is used for charging a further storage medium, in which no or substantially no exergy is accumulated, by passing said emerging gaseous inert carrier medium through a storage medium charged with sorbable constituent for complete or partial desorption of said sorbable constituent.

4,484,618

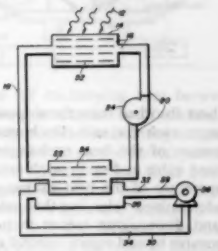
THERMOCHEMICAL ENERGY TRANSPORT USING A HYDROGEN RICH WORKING FLUID

Talbot A. Chubb, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 13, 1982, Ser. No. 377,876

Int. Cl.³ F28D *15/00*

U.S. Cl. 165—1 **13 Claims**



7. A method for transporting thermochemical energy comprising the steps of:

supplying heat into a first reactor vessel;

reacting the working fluid in the presence of a catalyst within the first reactor vessel to reform methane, carbon dioxide and steam in the working fluid into carbon monoxide and hydrogen, thereby absorbing heat, said working fluid consisting essentially of methane, steam, carbon monoxide, carbon dioxide and hydrogen said working fluid having the same ratio of atomic hydrogen to atomic oxygen to atomic carbon as the mixture: $y(H_2O)+z(H_2)+CH_4$ where y has a value between 1 and 5 and z has a value between 0.1 and 5;

transporting the working fluid to a second reactor vessel; and

reacting said working fluid in the presence of a catalyst within the second reactor vessel to methanate carbon monoxide and hydrogen into methane, carbon dioxide and steam thereby delivering heat.

4,484,619

VEHICLE TEMPERATURE CONTROL SYSTEM

Rudolph J. Franz, Schaumburg, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 50,022, Jun. 18, 1979, Pat. No. 4,337,818. This application Jan. 11, 1982, Ser. No. 338,780

Int. Cl.³ F25B *13/00*

U.S. Cl. 165—2 **12 Claims**

1. A system for automatically controlling a vehicle passenger compartment cooling unit having an air heat exchanger for maintaining the compartment at a desired temperature, said control system comprising:

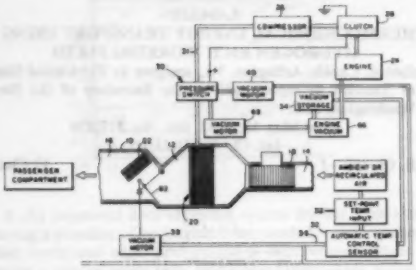
(a) means for selecting a desired temperature at which the air in said compartment is to be maintained and providing an output indicative thereof;

(b) temperature sensing means for sensing the air temperature within said compartment, said temperature sensing

means including means for generating a modulated control signal having a magnitude responsive to the difference between the air temperature in said compartment, and said desired temperature;

(c) clutch means engageable and disengageable for transmitting power from the engine of said vehicle to said cooling unit; and

(d) means for engaging and disengaging said clutch means, said engaging and disengaging means responsive to the



amount of heat absorbed from the air passing through said heat exchanger such that said clutch means is engaged as the temperature of the heat exchanger reaches a first predetermined value and said clutch means is disengaged as the temperature of the heat exchanger falls below a second predetermined value less than said first value, said engaging and disengaging means including adjustment means responsive to said sensor control signal for varying said first and second predetermined temperatures at which said clutch means is engaged.

4,484,620

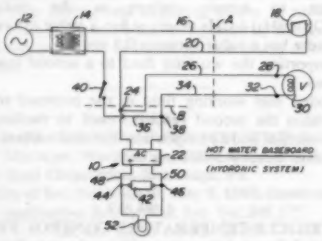
SYSTEM FOR MONITORING ENERGY USAGE IN SEPARATE UNITS OF MULTIPLE-UNIT STRUCTURE

Thomas K. McHugh, Glenside, Pa., assignor to First Edgemont Corp., Media, Pa.

Filed Oct. 29, 1981, Ser. No. 316,147

Int. Cl.³ F28F 0/00; G01K 17/00

U.S. Cl. 165—11 R **6 Claims**



1. A system for measuring energy consumed for heating or cooling units of a multi-unit structure, the multi-unit structure having a distribution system for providing heating or cooling medium to the units and a source of electrical energy, the measuring system for each unit comprising:

a temperature sensitive electric switch element in the unit;

an electrically operable control element in the unit for controlling the flow of heating or cooling medium provided by the distribution system;

measuring means for measuring the amount of heating or cooling medium provided to a unit; and

circuit means, including a plurality of conductive leads at least four of which extend into the unit and connect to the switch element and the control element, for interconnecting the switch element, the control element, and the measuring means to the source of electrical energy so that during normal operation the switch element will control the operation of the control element and the measuring means will measure the amount of heating or cooling medium provided to the unit through the control element, and further so that if the conductive leads connected to the switch element or the control element are broken or connected to bypass those elements the measuring means will not be prevented from measuring the amount of heating or cooling medium provided to the unit, thereby providing a tamper-proof system.

4,484,621

TUBE AND RIB HEAT EXCHANGER

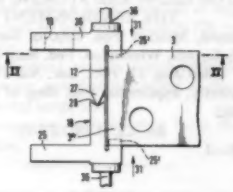
Reinhold Kuchelmeister, Waldenbuch, Fed. Rep. of Germany, assignor to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Filed Mar. 31, 1982, Ser. No. 363,767

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115189; Jan. 29, 1982, 3202901

Int. Cl.³ F28F 9/00, 1/32

U.S. Cl. 165—67 **17 Claims**



1. A heat exchanger suitable for use as a radiator in a motor vehicle, comprising:

a plurality of generally parallel tubes;

a plurality of ribs spaced apart and oriented generally parallel to one another in a direction perpendicular to the tubes, and through which the tubes pass, said ribs forming a generally rectangular block having front and back faces and relatively narrower side faces;

a heat exchange medium compartment located at at least one end of the tubes and being in communication with the interior of said tubes; and

at least one synthetic resin mounting strip attached to one of said side faces formed by the ends of the ribs, wherein the strip comprises a portion having a generally U-shaped cross section, with the legs of said U-shaped configuration extending along a portion of the front and back faces of said block of ribs and wherein the strip is fastened to said block by having the rib ends embedded into the material of the legs of the strip to provide a positive, interlocking joint between the ribs and the strip.

4,484,622

INTEGRAL HEADER HEAT EXCHANGER

David L. Satchwell, Rolling Hills Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Apr. 27, 1982, Ser. No. 372,136

Int. Cl.³ F28F 3/06, 9/26

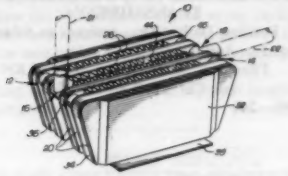
U.S. Cl. 165—153 **19 Claims**

1. A heat exchanger, comprising:

a core formed by a plurality of divider plates arranged in an alternating stack with a plurality of extended surface heat transfer elements to define first and second flow paths for respective passage of first and second working fluids in heat exchange relation with each other, said heat transfer elements being sandwiched between predetermined pairs

of said divider plates and cooperating therewith to define said second flow path; and

header means for communicating with the first flow path, said header means being mounted between adjacent pairs of said divider plates in the stack and including a fluid



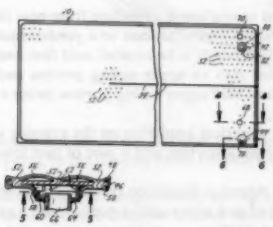
fitting mounted between one of said predetermined pairs of said divider plates and projecting in a selected direction generally away from said divider plates, said one of said predetermined pairs of divider plates sandwiching at least two of said elements in a multiple layer relation.

4,484,623

DUAL FLOW CONDENSER WITH THROUGH CONNECTIONS

David W. Rowe, Springfield, and William R. Waynick, Walnut Grove, both of Mo., assignors to Paul Mueller Company, Springfield, Mo.

Filed Apr. 8, 1983, Ser. No. 482,968
Int. Cl.³ F28F *9/22, 3/14;* F25B *27/02*
U.S. Cl. 165—164 **15 Claims**



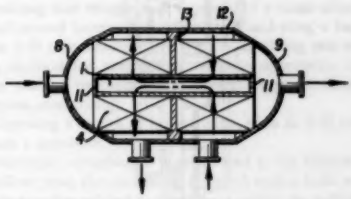
1. A heat exchange unit comprising three plates, said plates comprising an adjacent outer plate, an inner plate, and an opposite outer plate, said plates being joined in sandwich fashion by a plurality of spaced spot welds extending through them, the outer plates being comprised of thinner gauge material and expanded away from said divider plate to increase the size of the passageway between each of said outer plates and the divider plate, and means to access the passageway between the divider plate and the opposite outer plate in fluid tight manner at one of said spot welds comprising means defining a hole in the adjacent outer plate, said hole being substantially centered over a spot weld, means defining a hole in said divider plate at least partially surrounding the spot weld, a connecting tube, said tube being positioned through said adjacent outer plate hole and against said divider plate and covering the hole therein, and means sealing the tube to the divider plate so that the tube is fluid coupled to the passageway between the opposite outer plate and the divider plate and fluid sealed from the passageway between the adjacent outer plate and the divider plate.

4,484,624

APPARATUS FOR TRANSFERRING HEAT BY MEANS OF HOLLOW FILAMENTS, AND ITS USE IN VARIOUS HEATING SYSTEMS

Jan Vleggaar, Doetinchem, Netherlands; Karl Ostertag, and Klaus Schneider, both of Erlenbach, Fed. Rep. of Germany, assignors to Akzo nv, Arnhem, Netherlands

Continuation of Ser. No. 92,078, Nov. 6, 1979, abandoned. This application Jun. 22, 1982, Ser. No. 390,807
Claims priority, application Netherlands, Nov. 6, 1978, 7811007
Int. Cl.³ F28F *9/22;* F28D *7/02*
U.S. Cl. 165—172 **5 Claims**



1. An apparatus for exchanging heat between two fluids comprising a tubular core member with a fluid-permeable tube wall and hollow polymer filaments having an outer diameter of 0.05 to 5 mm and a wall thickness of 5 to 20 percent of the outer diameter, means for flowing a first fluid through the core member and its permeable tube wall, said hollow filaments extending in the form of a helix in a plurality of more than two layers wound upon each other with the hollow filaments of each layer multiply crossing the hollow filaments of the next layers and the innermost layer of the hollow filaments being wound on the core, and means for flowing a second fluid through the hollow filaments.

4,484,625

WELL CASING PERFORATED ZONE WASHING APPARATUS

John P. Barbee, Jr., New Orleans, La., assignor to The Western Company of North America, Fort Worth, Tex.

Filed Apr. 20, 1982, Ser. No. 370,056
Int. Cl.³ E21B *37/00*
U.S. Cl. 166—185 **11 Claims**

1. A tool for washing the perforated zone of a well casing in an oil or gas well comprising:

a tubular mandrel having a flow passage therethrough with means for connecting one end of the mandrel to the well drill string and the second end of the mandrel to a flow blocking valve for preventing the flow of fluid from the flow passage of said mandrel out of said second end, said mandrel having a predetermined number of apertures therethrough and no more,

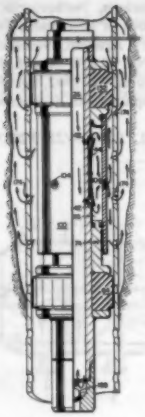
first and second radially expandable seal means completely encircling and carried on said mandrel at spaced positions thereon,

an outer sleeve surrounding said mandrel between said seal means defining an annular chamber between said sleeve and mandrel, said sleeve having a predetermined number of apertures therethrough, and no more, of a combined total area less than the combined area of the predetermined apertures through said mandrel,

valve means comprising a first and second annular piston carried within said annular chamber having one face communicating with the annular chamber and an opposite face engaging, respectively, said first and second seal means, said pistons being movable against said seal means upon pressurization of said annular chamber to radially expand said seal means against said casing, and

means for injecting a fluid under pressure into the flow

passage of said tubular mandrel whereby said fluid is discharged into said annular chamber and through the predetermined number of apertures in said sleeve to the exterior of said tool, creating a pressure within said annular chamber to move said pistons against said seal means, thereby radially expanding said seal means against said casing while discharging fluid exteriorly of said tool.

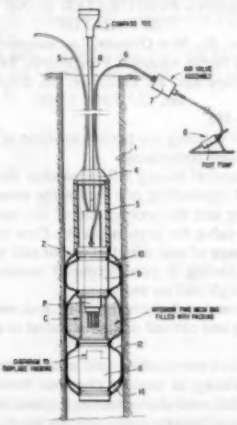


4,484,626

PNEUMATIC PACKER

William B. Kerfoot, Falmouth, and Stuart M. Skinner, Jr., Marion, both of Mass., assignors to K-V Associates, Inc., Falmouth, Mass.

Filed Apr. 15, 1983, Ser. No. 486,266
Int. Cl.³ E21B *33/124*
U.S. Cl. 166—191 **19 Claims**



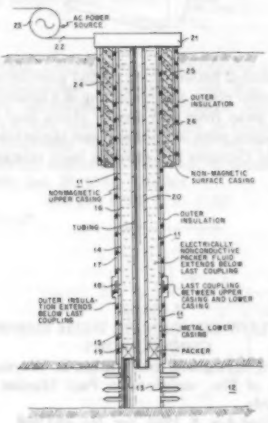
6. An assembly which permits measurement of direction and flow rate of a fluid entering into a borehole, said assembly comprising an upper section, a lower section and an intermediate section containing a supply of particulate material, said upper section including expandable means for pressing outwardly against a borehole to anchor sealingly thereagainst, said lower section including expandable means for pressing outwardly against a borehole to anchor sealingly thereagainst, said expandable means when expanded being effective to constrain the flow of fluid into said borehole to pass horizontally through said intermediate section and said supply of particulate material contained therein.

4,484,627

WELL COMPLETION FOR ELECTRICAL POWER TRANSMISSION

Thomas K. Perkins, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 30, 1983, Ser. No. 509,839
Int. Cl.³ E21B *36/04, 43/24*
U.S. Cl. 166—248 **18 Claims**



1. A well completion for electrical power transmission to subsurface electrode for applying heat to a subsurface formation comprising:

(a) a metal first casing string extending from near the surface of the earth downward at least to a predetermined point where an electrode is to be located, said first casing string being divided into an upper casing portion and a lower casing portion, said upper casing portion being a nonmagnetic metal;

(b) first outer electrical insulation on the exterior surface of said upper casing portion and a part of said lower casing portion;

(c) first inner electrical insulation covering most of the interior surface of said upper casing portion and a part of said lower casing portion;

(d) an inner tubing string extending from surface of the earth downward inside said first casing string through at least a part of said lower casing portion, said tubing string being adapted to conduct fluids between the surface and a predetermined subsurface point; and

(e) an alternating current power source electrically connected to said first casing string.

13. A method for completing a well for transmitting electrical power into a subsurface area comprising:

(a) lowering a metal lower casing string downward into the earth;

(b) connecting said lower casing string to a nonmagnetic metal upper casing string and lowering said upper casing string and said lower casing string downward into the earth at least to a first point where an electrode is to be located;

(c) covering most of the exposed exterior surface of an upper portion of said lower casing string with an electrical insulation as said lower casing string is being lowered into the earth;

(d) covering most of the exposed exterior surface of said

upper casing string with electrical insulation as said upper string is lowered into the earth;

(e) lowering a tubing string with a packer downward from the surface of the earth into and through said upper casing string and into said lower casing string;

(f) setting said packer at a point inside said lower casing string below the lowest point of said upper casing string;

(g) adding an electrically nonconductive liquid to the annulus between said tubing and said casing above said packer; and

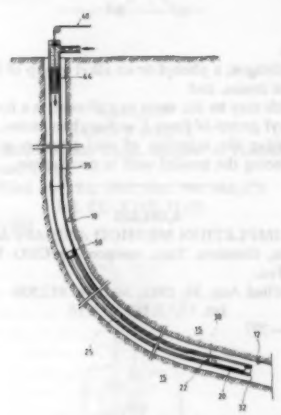
(h) connecting an alternating current power source to said upper casing string.

4,484,628

METHOD AND APPARATUS FOR CONDUCTING WIRELINE OPERATIONS IN A BOREHOLE

C. P. Lanmon, II, Longview, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Jan. 24, 1983, Ser. No. 460,344
Int. Cl.³ E21B *23/08, 47/00, 43/11*
U.S. Cl. 166—250 **6 Claims**



1. Apparatus for use in conjunction with pipe such as drill pipe for logging or perforating earth formations surrounding a borehole, comprising:

(a) a hollow length of stinger tubing having upper and lower ends and an outside diameter smaller than the inside diameter of the intended drill pipe,

(b) first docking means on the upper end of said stinger tubing adapted for receiving a locomotive thereon,

(c) second docking means mounted on the lower end of said stinger tubing adapted for receiving and coupling a locomotive thereto through said stinger tubing, and for making at least one electrical connection therewith,

(d) means for attaching a wireline tool to the lower end of said second docking means,

(e) releasable latching means mounted at least in part on said second docking means, for cooperatively latching said second docking means to a length of adjacent drill pipe when said second docking means is not coupled to a locomotive, and for releasing said second docking means from such drill pipe when coupled to a locomotive,

(f) a first locomotive having a seal portion with an effective outside diameter substantially equal to the inside diameter of the intended drill pipe and adapted for engaging said first docking means,

(g) a second locomotive including means for moving with and being propelled at least in part by said first locomotive, and being movable beneath and independently of said first locomotive, and having a seal portion with an effective outside diameter substantially equal to the inside diameter of said stinger tubing and adapted for pulling a logging cable through the drill pipe, through said first locomotive, and through said tubing, and for coupling to said second docking means,

(h) fluid passage means through said first locomotive which is closed when said second locomotive is moving therewith and which otherwise fluidly couples through said first locomotive from each side of said seal portion thereof when received upon said first docking means, and

(i) means below said first docking means for sealing the outside of said stinger tubing movably to the inside of the drill pipe, such that fluid pumped into the drill pipe will propel both locomotives so as to substantially pull the stinger out from the bottom of the drill pipe without buckling said stinger, and retrieval of a cable attached to said second locomotive will retract said stinger back into the drill pipe substantially without buckling said stinger.

5. A method for performing wireline operations, such as logging and/or perforating, in boreholes penetrating earth formations, comprising:

(a) disposing a length of hollow pipe, such as drill string, in such a borehole,

(b) releasably attaching a wireline tool to the bottom of the hollow pipe, the tool being engaged with a hollow extension member subject to movement within the hollow pipe, and

(c) moving a two-stage locomotive down through the pipe,

(d) upon reaching the hollow extension member, having the first stage locomotive engaging,

(e) equalizing the pressure in the hollow pipe across the first stage locomotive,

and

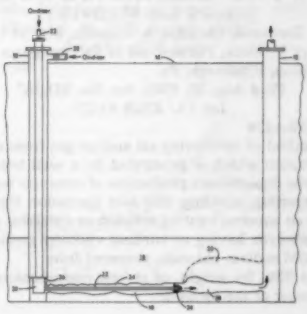
(f) having the second stage, following engagement of the downwardly moving first stage with the extension member, continuing moving downwardly through the hollow extension member to the tool.

4,484,629

MOVABLE OXIDIZER INJECTION POINT FOR PRODUCTION OF COAL IN SITU

Ruel C. Terry, Denver, Colo., assignor to In Situ Technology, Inc., Golden, Colo.

Filed Sep. 28, 1982, Ser. No. 426,170
Int. Cl.³ E21B *43/247*
U.S. Cl. 166—259 **3 Claims**



1. A method of gasifying coal in situ wherein a first vertical well and a spaced apart second vertical well have been drilled from the surface of the earth into an underground coal seam, and wherein the two vertical wells have been linked together with a channel through the coal seam, comprising the steps of

positioning a tubing bender/straightener aligned with the said channel in the first well,

inserting oxidizer injection tubing through the wellhead of the first well, through the tubing bender/straightener and

into the said linkage channel, wherein the extremity of the oxidizer injection tubing within the said channel is located at a point removed from the first well,

igniting the coal in the linkage channel adjacent to the extremity of the oxidizer injection tubing,

injecting oxidizer into the linkage channel through the oxidizer injection tubing with the resultant establishment of a georeactor in the linkage channel adjacent to the second well,

producing the gasified coal through the second well, then terminating injection of oxidizer through the oxidizer injection tubing then,

injecting oxidizer into the georeactor through the casing of the first well, and

producing gasified coal through the second well.

4,484,630

METHOD FOR RECOVERING HEAVY CRUDES FROM SHALLOW RESERVOIRS

Harold S. Chung, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 229,804, Jan. 30, 1981,. This application Mar. 8, 1983, Ser. No. 473,398

Int. Cl.³ E21B *43/17, 43/24*

U.S. Cl. 166—263 **2 Claims**

1. A method for the production of heavy oil from a shallow subterranean tar sand bed penetrated by at least one injection well and at least one spaced apart production well, comprising:

(a) forming a plurality of horizontal fractures spanning the distance between said injection well and said production well, said fractures being spaced apart in a vertical direction with respect to each other throughout the depth of the tar sand bed;

(b) injecting a solvent for the heavy oil into said fractures via said injection well;

(c) shutting in said injection well and said production well for a predetermined period of time to form a heavy oil/-solvent mixture of reduced viscosity by gravity-driven convective mixing;

(d) collapsing said fractures via fluid injection at lower than reservoir overburden pressures; and

(e) recovering said heavy oil/solvent mixture from said tar sand bed.

4,484,631

USE OF POLYAMPHOLYTES TO ENHANCE OIL AND/OR GAS RECOVERY

Nancy S. Sherwood; Christine A. Costello, both of Coraopolis, and Gary F. Matz, Pitcairn, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

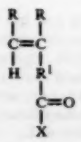
Filed Aug. 25, 1982, Ser. No. 411,167

Int. Cl.³ E21B *43/22*

U.S. Cl. 166—274 **4 Claims**

1. A method of recovering oil and/or gas from a subterranean formation which is penetrated by a well bore, and for reducing the concomitant production of reservoir water therefrom comprising injecting into said formation through said well bore an aqueous treating solution or emulsion containing a polyampholyte, having an intrinsic viscosity greater than 10 dl/g in 1.0M sodium chloride, prepared from:

(i) 40 to 90%, by weight, of at least one anionic-containing monomer of the formula:



wherein

R, which may be the same or different, is hydrogen, a phenyl or an alkyl group of from 1 to 3 carbon atoms,

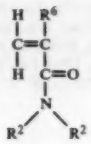
R^1 is a straight or branched chain of from 0 to 12 carbon atoms,

X is $—NHCH_2C(CH_3)_2SO_3Y$ or OY, and

Y is hydrogen or an alkali or alkaline earth metal;

(ii) 0.5 to 60%, by weight, of at least one cationic-containing monomer selected from the group consisting of: diethyl diallyl ammonium chloride and dimethyl diallyl ammonium chloride; and

(iii) 1.5 to 58.5%, by weight, of at least one non-ionic monomer selected from the group consisting of acrylonitrile, vinyl acetate, butadiene, vinyl pyridine, methacrylate, styrene and monomers of the formula:



wherein

R^6 is hydrogen, a phenyl or an alkyl group of from 1 to 3 carbon atoms, and

R^2, which may be the same or different, is a hydrogen, or an alkyl group of from 1 to 3 carbon atoms,

then terminating the injection of said treating solution and thereafter placing the treated well in production.

4,484,632

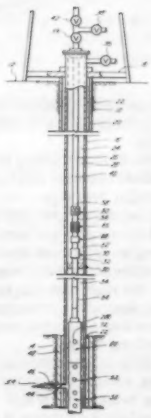
WELL COMPLETION METHOD AND APPARATUS

Roy R. Vann, Houston, Tex., assignor to GEO Vann, Inc., Houston, Tex.

Filed Aug. 30, 1982, Ser. No. 412,930

Int. Cl.³ E21B *43/116*

U.S. Cl. 166—297 **41 Claims**



2. An apparatus for completing a well having a cased borehole, comprising:

a pipe string suspended within the cased borehole;

a packer disposed on the pipe string for forming an upper annulus and a lower annulus;

a valve connected in the pipe string for preventing fluid flow through the flow bore of the pipe string when in the closed position;

pressure responsive means disposed on the pipe string, said valve and said pressure responsive means being disposed

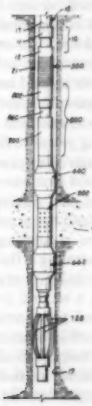
above said packer, said pressure responsive means being exposed to fluid pressure in the upper annulus;
perforations in the drill pipe located below the packer in the lower annulus to permit fluid flow between the lower annulus and the tubing flow bore;
a perforating gun suspended on the end of the pipe string;
a firing head disposed on said perforating gun;
said valve being operative when opened to produce a pressure differential across the pressure responsive means;
said pressure responsive means being operative when subjected to said pressure differential thereacross to produce a signal;
signal transmission means extending from said pressure responsive means to said firing head;
said signal transmission means transmitting said signal to said firing head to actuate said firing head and detonate said perforating gun.

4,484,633

SAFETY JOINT

John T. Brandell, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Apr. 11, 1983, Ser. No. 484,079
Int. Cl.³ F21B *31/00*
U.S. Cl. 166—301 **20 Claims**



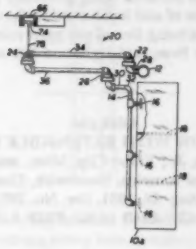
1. A method of operating a safety joint in a pipe string including a rotary actuated pump in a well bore, comprising:
(a) setting down on said pipe string and locking said rotary actuated pump against rotation;
(b) applying torque to said safety joint through said locked pump;
(c) pulling substantially upward on said pipe string with sufficient force to sever a tension sleeve means in said safety joint;
(d) setting down on said pipe string and locking said rotary actuated pump against rotation;
(e) applying torque to said safety joint through said locked pump;
(f) pulling substantially upward on said pipe string; and
(g) repeating steps (d), (e) and (f) a plurality of times until said safety joint separates.

4,484,634

FLEXIBLE FIRE PROTECTION SYSTEM

Kenneth R. Swanson, Lawrence, and Dean E. Wanders, Eudora, both of Kans., assignors to Aeroquip Corporation, Jackson, Mich.

Filed Jan. 10, 1983, Ser. No. 456,610
Int. Cl.³ A62C *25/00*
U.S. Cl. 169—52 **5 Claims**



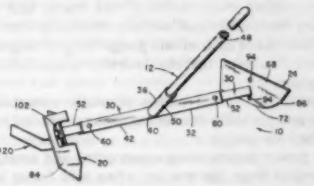
1. A flexible rigid conduit system, particularly suitable for fire protection sprinkler installations on movable storage racks comprising, in combination, a fixed supply conduit, a distribution conduit affixed to a movable storage member, nozzle means mounted upon said member in communication with said distribution conduit, a first rotary joint communicating with said supply conduit, a first conduit communicating with said first joint, a second rotary joint communicating with said distribution conduit, a second conduit communicating with said second joint, and a third rotary joint interconnecting said first and second conduits at a location spaced from said first and second rotary joints, respectively, wherein said first and second conduits and third joint form a flexible elbow, said first and second conduits being generally horizontally disposed, and movable support means supporting said first and second conduits at a location spaced from said first rotary joint supporting said first and second conduits in said generally horizontal orientation.

4,484,635

GARDEN ROW MAKING TOOL

Gordon D. Sidlo, 2610 Boyce St., Hastings, Nebr. 68901

Filed Jul. 20, 1982, Ser. No. 400,077
Int. Cl.³ A01B *1/02*
U.S. Cl. 172—26 **3 Claims**



1. A garden row making tool comprising an elongated handle, a shovel on one side of said handle, a guide on the opposite side of said handle, said guide being adapted to follow an old furrow at a time when said shovel is making a new furrow parallel to said old furrow, a support assembly disposed between and interconnecting said shovel and said guide and attached to the handle, said support assembly being adjustable in length for spacing said shovel and said guide apart various amounts for different row spacings, said support assembly comprising an elongated central member connected to said

handle and having right and left portions on right and left sides of said handle, elongated right and left end members telescopically received on right and left portions of said central member, said shovel and said guide being attached each to a different one of said end members, said guide having two parallel substantially planar sides forming the major surfaces thereof, said sides extending at right angles to the length of said elongated central member and parallel to the longitudinal axis of said handle, said shovel being provided with two opposing major surfaces, sais surfaces being generally perpendicular to the longitudinal axis of said handle and to the major surfaces of said guide, said tool being free of any parts extending a substantial distance down from said right and left support assembly portions.

4,484,636

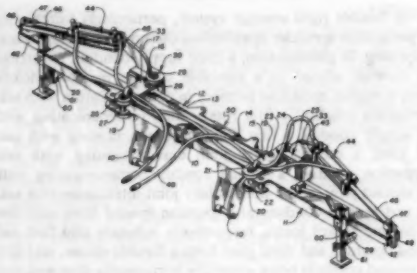
LEVEE PLOW WITH EXTENSIBLE LINKAGE

Emory R. Hodgson, Jr., Yazoo City, Miss., assignor to Dynamics Corporation of America, Greenwich, Conn.

Filed Aug. 28, 1981, Ser. No. 297,255

Int. Cl.³ A01B *13/02*; E02F *5/22*

U.S. Cl. 172—454 **17 Claims**



14. A levee plow comprising:

(a) a longitudinally extensible harrow-gang-supporting frame having at least a pair of sections movable relative to each other to lengthen and shorten said frame and being constructed and arranged to be connected to and supported by a tractor to extend transversely thereof and to be moved thereby between gang-elevating non-operative position and gang-lowering operative position;

(b) a pair of laterally spaced harrow-gangs each having inner and outer end portions and being pivotally mounted on said frame adjacent its inner end portion for pivotal movement relative to said frame about a generally horizontal axis extending transversely of said frame, said gangs extending rearwardly and laterally outwardly from said axis;

(c) the harrows of each of said gangs being arranged to move the soil traversed thereby laterally toward the other of said gangs;

(d) controllable power means pivotally mounted on said frame and pivotally connected to the outer end portions of said harrow-gangs;

(e) said power means being constructed and arranged to be controlled from the tractor when said frame is so connected thereto;

(f) said power means being constructed and arranged to move the outer end portions of said gangs vertically and to force and hold the outer end portions of each of said gangs at a substantially lower elevation than its inner end portion, when so desired; and

(g) mechanical means constructed and arranged to extend between said frame sections to controllaby move the same with respect to each other and comprising an extensible linkage extending parallel to said frame with one end of said linkage mounted on an exterior surface of one of said frame sections and the other end of said linkage mounted on an exterior surface of the other one of said frame sections.

4,484,637

POSITIONING CONTROL SYSTEM FOR ROCK DRILL SUPPORT APPARATUS

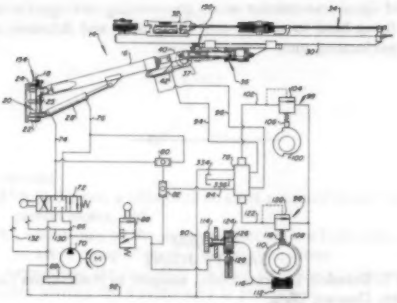
James R. Mayer, Englewood, Colo., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Jan. 19, 1979, Ser. No. 4,957

The portion of the term of this patent subsequent to May 19, 1998, has been disclaimed.

Int. Cl.³ E21C *1/00*; F15B *15/00*

U.S. Cl. 173—2 **17 Claims**



1. In a rock drill apparatus a drill boom mounted on a boom support for pivotal movement about a first pivot axis, an elongated drill feed bar mounted on said boom for pivotal movement with respect to said boom about a second pivot axis, a rock drill mounted on said feed bar and adapted to actuate an elongated drill stem, a first boom actuator for moving said boom pivotally with respect to said boom support, a first feed bar actuator for effecting pivotable movement of said feed bar about said second pivot axis, said first boom actuator and said first feed bar actuator being pressure fluid operated, a pressure fluid control including a source of pressure fluid, valve means operable at will to cause said first boom actuator to move said boom about said first pivot axis, a control valve for supplying pressure fluid to said first feed bar actuator, first sensing means comprising a first pressure regulating valve associated with said first pivot axis for generating a fluid pressure signal which varies in relation to the pivotal movement of said boom, second sensing means comprising a second pressure regulating valve associated with said second pivot axis for generating a fluid pressure signal which varies in relation to the pivotal movement of said feed bar with respect to said boom, and means for comparing said fluid pressure signals and for causing said control valve to effect a predetermined amount of pivotal movement of said feed bar by controlling the supply of pressure fluid to said first feed bar actuator.

4,484,638

LIQUID INERTIA TOOL

Joe E. West, Rte. 1, Box 158, Meridian, Tex. 76665

Continuation-in-part of Ser. No. 714,375, Aug. 16, 1976, abandoned. This application Sep. 12, 1977, Ser. No. 832,533

Int. Cl.³ B25D *9/00*, *11/00*

U.S. Cl. 173—90 **39 Claims**

1. A pile driver comprising:

a liquid ram tube orientable in the direction in which the pile is to be driven;

means for introducing liquid into said ram tube adjacent the end thereof remote from said pile;

a piston slidably mounted in the other end of said ram tube said piston having an inner face facing into said ram tube;

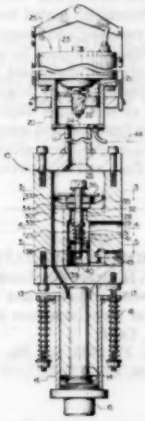
piston return means connected to said piston and to said ram tube for urging said piston into said ram tube;

liquid diverter means in said ram tube adjacent said piston for diverting liquid moving through said tube radially outward away from the inner face of said piston;

valve means in said ram tube for blocking said liquid diverter means when liquid flowing through said ram tube attains a selected velocity;

means for resetting said valve means to unblocking condition;

a pile driving tool connected to the outer end of said piston;



said pile driver being adapted for underwater employment, said means for introducing liquid into said ram tube comprising at least one water inlet adjacent the remote end of the ram tube for admitting water from the surrounding body of water, and said liquid diverter means exhausting to said surrounding body of water;

pump means adjacent said water inlet for forcing water through said ram tube;

means for supporting said pile driver over a piling to be driven; and

said pump means comprising a venturi throat formed at the inlet of said ram tube and induction nozzle means positioned in said throat.

4,484,639

METHOD AND APPARATUS FOR PERFORATING SUBSURFACE EARTH FORMATIONS

David B. Ayers, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jul. 25, 1983, Ser. No. 516,812
Int. Cl.³ E21B *43/11*
U.S. Cl. 175—4.56 **12 Claims**

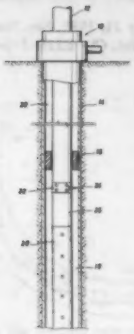
1. A method for perforating subsurface earth formations surrounding a borehole, comprising the steps of:

positioning on the end of a tubing string a perforating gun and firing head assembly within a borehole;

subsequently lowering through said tubing string a percussion firing assembly into coupling relationship with said firing head assembly;

dropping an impact member through said tubing string, the collision of said impact member with said percussion firing assembly for detonating said percussion firing assembly to thereby detonate said firing head assembly and said perforating gun;

subsequently removing said percussion firing assembly from said firing head assembly and from said borehole; and



subsequently lowering another percussion firing assembly through said tubing string into coupling relationship with said firing head assembly.

4,484,640

TOOL FOR FORMATION OF HOLES IN MACROPOROUS COMPRESSIBLE SOILS

Valentin I. Feklin; Viktor B. Shvets, and Boris M. Mazo, all of Dnepropetrovsk, U.S.S.R., assignors to Dnepropetrovsky Inzhenerno-Stroitelny Institut, Dnepropetrovsk, U.S.S.R.

Filed Jul. 12, 1982, Ser. No. 397,438
Claims priority, application U.S.S.R., Sep. 22, 1981, 3330154
Int. Cl.³ E21B *7/26*
U.S. Cl. 175—19 **6 Claims**

1. A tool for the formation of holes in macroporous compressible soils, said tool comprising:

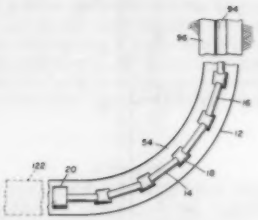
a body adapted for connection to a drill rod, said body defining a cylindrical calibrating portion to be positioned adjacent to the drill rod, an end piece contiguous with the calibrating portion and extending remote from the drill rod, said end piece comprised of at least two conical coaxial portions interconnected by a transition portion, the radii of said coaxial portions decreasing stepwise from the calibrating portion in a direction towards the free end of said end piece, the stepwise decreasing separating the coaxial portions into a plurality of distinct conical surfaces for the compaction of the soil, each conical surface described by a generatrix of a predetermined length, and defined by two conical helical lines serving as guides for the generatrix, and said transition portion defined by conical surfaces for the compaction of the soil, said transition portion forming a smooth transition of the body surface for the compaction of the soil between the conical surfaces of the coaxial body portion with a larger radius and the conical surfaces of the coaxial portion with a smaller radius.

4,484,641

TUBULARS FOR CURVED BORE HOLES

Newton B. Dismukes, 2952 Buttonwood Dr., Carrollton, Tex. 75006

Filed May 21, 1981, Ser. No. 265,997
Int. Cl.³ E21B 7/04
U.S. Cl. 175—61 **15 Claims**



13. The method of conducting a drilling operation through a curved portion of a bore hole comprising:

a. inserting into said portion a rigid, twist resistant, high strength pipe joint having a rotary boring tool and means for causing said boring tool to rotate affixed to the nether end thereof and a fluid tight, twist resistant union capable of mis-alignment only in a single plane to the near end thereof;

b. inserting a second pipe joint connected to said union;

c. inserting a second fluid tight, twist resistant union capable of mis-alignment only in a single plane connected to said second pipe joint in a manner such that its plane of mis-alignment is substantially the same as the plane of mis-alignment of the first union;

d. inserting an additional pipe joint;

e. circulating drilling fluid through said pipe joints, unions and boring tool; and

f. activating said boring tool to conduct said drilling operation.

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REVERSE ACTION AUGER

Francis C. Evans, Kamloops, Canada, assignor to Legato Drilling Ltd., Kamloops, Canada

Continuation of Ser. No. 347,385, Feb. 2, 1982, abandoned. This application Feb. 22, 1984, Ser. No. 580,784
Claims priority, application Canada, Jun. 10, 1981, 379484
Int. Cl.³ E21B 7/00
U.S. Cl. 175—65 **2 Claims**

1. A method of drilling a casingless borehole in the earth comprising the steps of:

(a) connecting one end of a length of drill steel to above-ground drive means adapted to rotate in a first rotary direction and connecting the other end of the drill steel to a drill bit, the drill steel including an elongated hollow drill stem having a continuous helical auger flight extending the full length thereof, said auger flight being secured to the outer surface of said drill stem and winding therearound in a second direction which is opposite to said first rotary direction, said auger flight having a diameter which is substantially equal to that of said drill bit;

(b) operating said drive means to rotate said drill steel and drill bit in said first rotary direction to advance said bit and steel into the earth;

(c) pumping drilling fluid under pressure into the hollow interior of said drill steel to exit through openings in said drill bit into the borehole created thereby; and

(d) continuing said pumping and rotating in said first direction, whereby tailings produced by said drill bit and said fluid under pressure encounter said auger flight and are forced, by fluid pressure and by downward forces created through rotation of said auger flight, to flow generally radially outwardly from the drill stem into natural fissures and porous zones of the surrounding earth formations, such that drilling fluid and tailings do not reach the top of the borehole.

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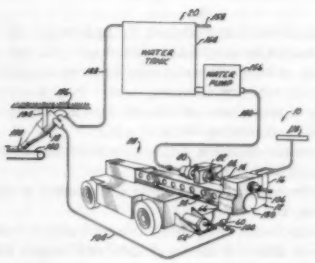
GAS-LIQUID-SOLIDS SEPARATION SYSTEM

Anil Mahyera; Carel J. H. Brest Van Kempen, both of Salt Lake City; Robert M. Sweet, Riverton, and Amber C. Davidson, Salt Lake City, all of Utah, assignors to Methane Drainage Ventures, Placentia, Calif.

Filed Jun. 27, 1983, Ser. No. 507,862
Int. Cl.³ E21B 21/06
U.S. Cl. 175—206 **10 Claims**



1. A gas-liquid-solids separation system for use with a drilling device comprising:

surge tank means for holding drilling efflux comprising gas, liquid and solids, said surge tank being adapted for mounting on said drilling device in a position for having a drill shaft extending therethrough;

a stuffing box attached to a back side of the surge tank means, configured for enabling passage of the drill shaft therethrough and including means for preventing drilling efflux to pass therethrough;

flange means attached to a front side of the surge tank means and aligned with said stuffing box for allowing passage of the drill shaft therethrough, said flange means being configured for mounting and sealing the surge tank to a borehole casing and including pipe means terminating within said surge tank means, for surrounding said drill shaft and enabling drilling efflux within the borehole to flow into the surge tank means;

gas cyclone means in fluid communication with said surge tank at a position above the liquid and solids portion of the drilling efflux within the surge tank means, for withdrawing gas from the surge tank means and separating entrained liquid therefrom;

slurry cyclone means including a slurry pump in fluid communication with said surge tank for withdrawing liquid and suspended solids therefrom and separating the solids from the liquid; and

tank means, in fluid communication with the slurry cyclone means and the drilling device and including a pump, for withdrawing liquid from the slurry cyclone, storing the liquid and supplying the liquid to the drilling device for use as a cutting fluid.

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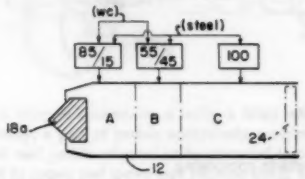
SINTERED AND FORGED ARTICLE, AND METHOD OF FORMING SAME

John P. Cook, Hopewell, and Bani R. Banerjee, Skillman, both of N.J., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Sep. 2, 1980, Ser. No. 183,593
Int. Cl.³ E21B *10/00*
U.S. Cl. 175—410 **10 Claims**



1. A sintered and hot-forged article, having areas of differing hardness, comprising:

a metallic, sintered and forged body;

said body comprising a matrix homogeneously formed from a pair of ingredients comprising steel powder and tungsten carbide particles; and

said body having a first matrix cross-section constituted by a first ratio of one of said ingredients to the other thereof, and a second matrix cross-section constituted by a second ratio of said one ingredient to said other ingredient; and wherein

said first ratio is approximately eighty-five percent tungsten carbide to fifteen percent steel powder, and said second ratio is approximately fifty-five percent tungsten carbide to forty-five percent steel powder.

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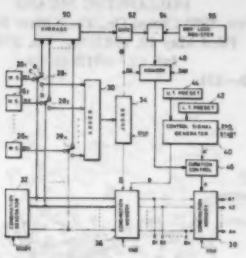
COMBINATION WEIGHING MACHINE WITH ARTICLE FEED CONTROLLED BY AVERAGE WEIGHT OF ARTICLES IN NON-SELECTED WEIGHING MACHINES

Shinichi Inoue, Kobe, Japan, assignor to Yamato Scale Company, Limited, Japan

Filed Feb. 18, 1983, Ser. No. 467,498
Int. Cl.³ G01G *19/22, 19/32, 13/24*
U.S. Cl. 177—25 **3 Claims**

1. A combination weighing machine, comprising a plurality of weighing units for weighing a plurality of articles each and producing weight indicating signals respectively, combination selecting means for summing said weight indicating signals in accordance with a predetermined set of combinations and electing a combination the total weight of which meets a predetermined qualification, and an automatic feeding device for feeding the articles to said respective weighing units; wherein said machine further comprises means for averaging those weight indicating signals which do not belong to said elected combination to produce a mean weight indicating signal every cycle of operation, and means for calculating the difference between said mean weight and a predetermined reference



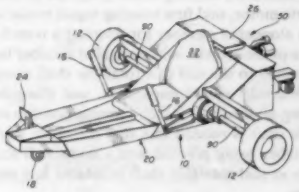
weight and controlling the feeding rate of said feeding device based upon said difference.

4,484,646

RECREATIONAL VEHICLE

Billy J. Smith, 13727 Bonaventure, Houston, Tex. 77065

Filed Nov. 9, 1982, Ser. No. 440,361
Int. Cl.³ B62D *11/08, 61/12*
U.S. Cl. 180—6.2 **12 Claims**



1. A recreational vehicle for adapted for moving about a relatively flat surface comprising

a frame,

a pair of laterally spaced drive wheels mounted on the frame,

a pair of longitudinally spaced wheels mounted on the frame, said, pair of laterally spaced drive wheels and said pair of longitudinally spaced wheels mounted on the frame so that all wheels continuously engage said surface simultaneously,

drive means mounted on the frame and individually coupled to each wheel of the pair of drive wheels for individually providing motive power to each wheel, and

individual control means associated with each of said drive means and said drive wheels for

(1) simultaneously braking a first drive wheel and de-coupling of said drive means to said first drive wheel, whereby if the other drive wheel is not braked and the other drive wheel is engaged with the drive means, the vehicle turns about the braked other drive wheel, and for

(2) releasing the braking of the first drive wheel while maintaining the de-coupling of the drive means to said first drive wheel after first braking the first drive wheel and de-coupling the first drive means to said first drive wheel, whereby if the other drive wheel is not braked and the other drive wheel is engaged with the drive means, the vehicle spins about the center line of the vehicle.

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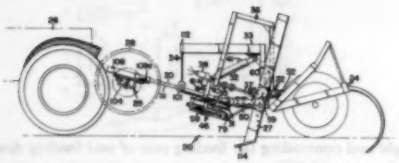
APPARATUS FOR GUIDING A VEHICLE PULLING AN IMPLEMENT INCLUDING TRENCH FORMING AND FOLLOWING MEANS

John McGrew, 1005 Cameo Dr., Thief River Falls, Minn. 56701

Filed May 10, 1982, Ser. No. 376,522
Int. Cl.[3] A01B 69/04
U.S. Cl. 180—131 17 Claims



1. An apparatus for guiding a tractor pulling an implement, the tractor having a conventional steering apparatus, the guiding apparatus comprising:

(a) a reversible electric motor suitably connected to a source of electrical energy for controlling said steering apparatus of said tractor;

(b) mechanical linkage means for interconnecting said reversible electric motor to said steering apparatus of said tractor; and

(c) first means for sending steering signals to said reversible electric motor, said first steering signal means comprising:

(i) an elongated member for forming a trench in the surface of the ground, said elongated member being fixedly attached to the end of a rotatable shaft mountable near a first side of said implement, said elongated member being pivoted to a trench forming position as said rotatable shaft is rotated in a first direction, said elongated member being pivoted into a nontrench forming position as said rotatable shaft is rotated in a second direction;

(ii) a wheel means for following a preformed trench in the surface of the ground, said wheel means being fixedly attached to said rotatable shaft for rotation therewith, said wheel means being raised into a non-trench following position above the surface of the ground when said rotatable shaft is rotated to said first direction, said wheel means being lowered into a trench following position as said rotatable shaft is rotated in said second direction, said wheel means including a universal joint means for enabling sideways movement of said wheel means, whereby said wheel means can follow the direction of a preformed trench when in said trench following position;

(iii) actuator means interconnected with said rotatable shaft for rotating said rotatable shaft, said actuator means being activated under operator control;

(iv) sensing means operatively interconnected to said wheel means for sensing the sideways movement of said wheel means, said sensing means sending steering signals to said reversible electric motor in response to said sideways movement of said wheel means; and

(v) on/off switch means for preventing said sensing means from sending steering signals to said reversible electric motor when said wheel means is raised into said non-trench following position and enabling the sending of steering signals from said sensing means to said reversible electric motor when said wheel means is lowered into said trench following position.

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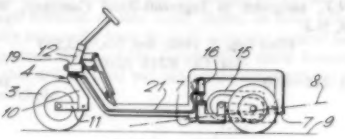
ULTRA NARROW ENCLOSED MOTOR VEHICLES

Edmund F. Jephcott, Fern Hill, Fairwarp, Uckfield, Sussex TN22 3BU, England

PCT No. PCT/GB79100107, § 371 Date Mar. 1, 1981, § 102(e) Date Feb. 26, 1981, PCT Pub. No. WO81/00088, PCT Pub. Date Jan. 22, 1981
PCT Filed Jun. 29, 1979, Ser. No. 238,596
Int. Cl.[3] B60G 17/00; B62D 61/06
U.S. Cl. 180—210 4 Claims



4. A road vehicle comprising

(a) a chassis structure including a first section, a second section and a pivoted connection between the two sections defining an axis extending in the longitudinal direction of the chassis structure and lying in a medial plane thereof;

(b) suspension means including a road running wheel arrangement mounted to each said sections of the chassis structure;

(c) a steering means for enabling steerable displacement of at least one of the road running wheel arrangements with respect to the chassis structure;

(d) means for mounting a prime mover to the first section of the chassis structure;

(e) means for transmitting drive from the prime mover to at least a selected one of the road running wheel arrangements;

(f) a body structure for encompassing at least one person mounted upon the second section of the chassis structure so as to be symmetrically positioned with respect to the medial plane of the chassis structure and so as to be bodily tiltable with the second chassis section relative to the first chassis section;

(g) user actuatable means for producing relative tilt between the body structure and the first chassis section, the user actuatable means including,

(i) first and second user operable foot pedals mounted with respect to the body structure and second chassis section so as to be located one to the left side of the medial plane and one to the right side of the medial plane;

(ii) means for producing relative tilt of the first chassis section relative to the second chassis section,

(iii) an operational control connection between the first pedal and the means for producing tilt, and

(iv) an operational control connection between the second pedal and the means for producing tilt,

(v) each said control connection being such that operation of its associated foot pedal causes the second chassis section to tilt relative to the first chassis section in a direction towards the same side of the medial plane as the operated foot pedal.

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TRICYCLE

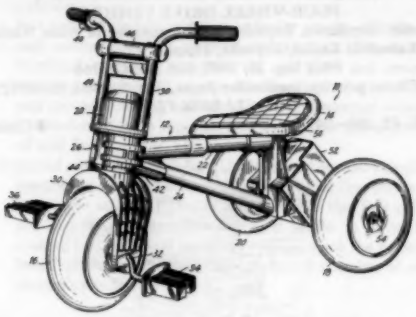
Melvin Kennedy, New York, N.Y.; Dietmar Nagel, Chester, N.J., and Avi Arad, Westport, Conn., assignors to Nagel, Kennedy, Arad & Associates, New York, N.Y.

Continuation-in-part of Ser. No. 438,397, Nov. 1, 1982,. This application Aug. 24, 1983, Ser. No. 526,157

The portion of the term of this patent subsequent to Oct. 9, 2001, has been disclaimed.

Int. Cl.³ B62D *61/08*

U.S. Cl. 180—216 2 Claims



1. A tricycle comprising a body, a front wheel coupled to said body, a pair of pedals operatively coupled to said front wheel, said pedals adapted to be operated to cause said front wheel to rotate and move said tricycle along a surface, a pair of rear wheels coupled to said body, a motor mounted to said body, transmission means operatively and selectively coupling said motor to said rear wheels and means for activation of said motor, said transmission mechanism including a drive gear drivingly engaged with said motor, driven gear means operatively engaged with said rear wheels, and at least one intermediate gear capable of selective engagement with said driven gear means and in constant engagement with said driving gear, said driving gear causing a torsional force to be exerted on said intermediate gear upon activation of said motor, and spring means operatively engaged to exert a force on said intermediate gear to bias said intermediate gear out of engagement with said driven gear means when said motor is not activated, the force exerted by said spring means on said intermediate gear being overcome by said torsional force caused by said driving gear on said intermediate gear during activation of said motor to cause said intermediate gear to engage said driven gear means to drive said rear wheels.

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MOTORCYCLE MOUNTED WITH V SHAPED ENGINE

Yoshiharu Isaka, and Yukiharu Hosoi, both of Shizuoka, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

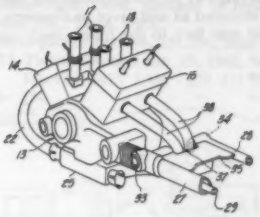
Filed Sep. 30, 1982, Ser. No. 431,624

Claims priority, application Japan, Dec. 11, 1981, 56-198482

Int. Cl.³ B62D *61/02*; F01N *7/08*

U.S. Cl. 180—219 16 Claims

1. In a motorcycle having a frame, an engine with at least one cylinder having a rearwardly facing exhaust port, a rear wheel, and a pair of spaced apart suspension arms suspending said rear wheel for pivotal movement relative to said frame and an exhaust device extending transversely across said frame in proximity to and below the forward ends of said suspension arms, the improvement comprising said arms being pivotally supported by said frame by independent spaced apart pivots with a gap therebetween and an exhaust pipe extending from



said exhaust port through said gap and terminating in said exhaust device.

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AIR INTAKE SYSTEM FOR MOTORIZED CYCLES

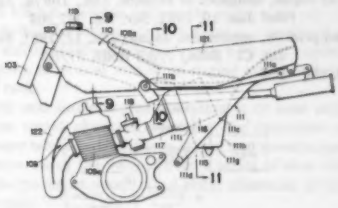
Shigeru Hattori, and Tomoyuki Tagami, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 22, 1982, Ser. No. 443,602

Claims priority, application Japan, Nov. 25, 1981, 56-174077[U]

Int. Cl.³ B60K *15/02*

U.S. Cl. 180—225 19 Claims



1. In a motorized cycle having a top bridge and a fuel tank disposed substantially behind said top bridge, an air intake system comprising:

an outside air introducing path formed in the interior of said fuel tank by means of a partition, so as to be separated from the fuel, and having an outside air intake opening formed in the front portion of said tank; and

an air cleaner disposed downstream of said air introducing path.

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SUSPENSION SYSTEM

Kouji Shiratsuchi, Saitama, and Yoshimi Ishikawa, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1982, Ser. No. 412,505

Claims priority, application Japan, Sep. 4, 1981, 56-138611; Sep. 4, 1981, 56-138610

Int. Cl.³ B62K *25/20*

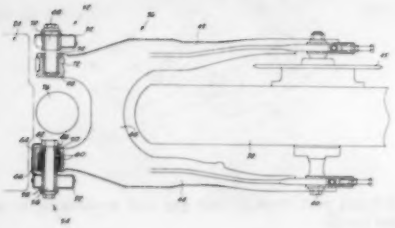
U.S. Cl. 180—227 6 Claims

1. A rear wheel suspension system for a vehicle having front

and rear wheels, a frame and a centrally mounted engine, comprising

two pivot mechanisms laterally spaced and mounted to the frame;

a rear fork having two forwardly extending, laterally spaced members mounted to said pivot mechanisms to pivotally mount said rear fork to the frame, each said forwardly



extending member including a socket, one of said pivot mechanisms having a first pivot pin fixed to the frame and a first pivot bearing fixed to one of said sockets, said first pivot pin being axially slidable in said first pivot bearing, the other of said pivot mechanisms having a second pivot pin fixed to the frame and a second pivot bearing fixed to one of said sockets, said second pivot pin being axially fixed in said second pivot bearing.

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AUTOMATIC DRIVING WHEEL CHANGE-OVER APPARATUS

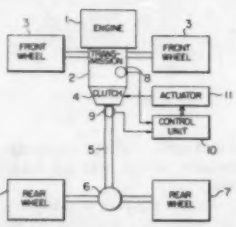
Shigeru Horikoshi, Mito, and Tatsunori Sakaguchi, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 10, 1982, Ser. No. 387,208

Claims priority, application Japan, Jun. 12, 1981, 56-89637

Int. Cl.³ B60Q *1/00*; B60K *31/00*

U.S. Cl. 180—233 **3 Claims**



1. An automatic driving wheel change-over apparatus comprising:

first wheels and second wheels driven by an engine;

clutch means for effecting a change-over between a drive by said first wheels and a drive by said first and second wheels;

first detecting means for detecting a rotational speed of said first wheels;

second detecting means for detecting a rotational speed of said second wheels;

means for determining a difference between the rotational speed signals respectively detected by said first and said second detecting means is greater than a predetermined value;

first acuating means responsive to an output of said means for determining for acutating said clutch means and to drive said first and second wheels for a predetermined time period;

counting means for counting a number of times said first actuating means is operated during a second predetermined time period which is longer than said first predetermined time period; and

second actuating means for actuating said clutch means for a third predetermined time period which is longer than said first predetermined time period to thereby drive said first and second wheels when said counting means reaches a predetermined value.

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TORQUE TRANSFER MECHANISM FOR A FOUR-WHEEL DRIVE VEHICLE

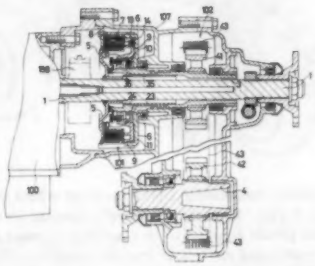
Yoichi Hayakawa, Toyoake, Japan, assignor to Aisin Warner Kabushiki Kaisha, Toyoake, Japan

Filed Sep. 28, 1982, Ser. No. 425,766

Claims priority, application Japan, Jun. 8, 1980, 55-107927

Int. Cl.³ B60K *17/34*

U.S. Cl. 180—247 **9 Claims**



1. A torque transfer mechanism for a four-wheel drive vehicle, comprising the output shaft of a power source of said vehicle,

a first intermediate output shaft capable of being coupled with said output shaft by means of frictional coupling means, said frictional coupling means comprising:

a first coupling member connected to one of said output shaft of the power source and said first intermediate output shaft and provided with frictional members,

a second coupling member connected to the other of said output shaft and said first intermediate output shaft, disposed concentrically with said first coupling member, provided with frictional members and forming a first cylinder,

a first piston fitted in said first cylinder axially slidably of said second coupling member and adapted to cause the frictional members provided for said first and second coupling members to engage frictionally so that said frist and second coupling members are interconnected when a pressurized fluid is supplied into said cylindrical chamber of said first cylinder, and

a second piston fitted axially slidably of said second coupling member in a second cylinder formed in said first piston so as to open into said cylindrical chamber of said first cylinder and adapted to cause said first piston to move for making said frictional members engage when the pressurized fluid is supplied into the cylindrical chamber of said second cylinder.

5. A torque transfer mechanism for a four-wheel drive vehicle, comprising the output shaft of a power source of the vehicle,

an intermediate shaft disposed coaxially with said output shaft,

an auxiliary transmission interposed between said output shaft of the power source and said intermediate shaft and adapted to transmit the rotation of said output shaft to said intermediate shaft at predetermined ratios of revolving rate,

a first intermediate output shaft connected to said intermediate shaft through a frictional coupling means, said frictional coupling means comprising:

a first coupling member connected to one of said intermediate shaft and said first intermediate output shaft and provided with frictional members,

a second coupling member connected to the other of said intermediate shaft and said first intermediate output shaft, disposed concentrically with said first coupling member, provided with frictional members and forming a first cylinder

a first piston fitted in said first cylinder axially slidably of said second coupling member and adapted to cause the frictional members provided for said first and second coupling members to engage frictionally so that said first and second coupling members are interconnected when a pressurized fluid is supplied into the cylindrical chamber of said first cylinder, and

a second piston fitted axially slidably of said second coupling member in a second cylinder formed in said first piston so as to open into the cylindrical chamber of said first cylinder and adapted to cause said first piston to move for making said frictional members engage when the pressurized fluid is supplied into the cylindrical chamber of said second cylinder.

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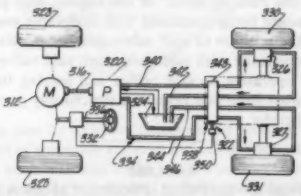
GEARLESS HYDRAULIC TRANSMISSION AND VEHICLE DRIVE SYSTEM

Darrel J. Sheppard, Sr., 28751 Delton, Madison Heights, Mich. 48071

Division of Ser. No. 165,211, Jul. 1, 1980, Pat. No. 4,373,605. This application Jan. 3, 1983, Ser. No. 455,225

Int. Cl.³ B60K *17/10*

U.S. Cl. 180—308 **6 Claims**



1. In a vehicle having a right wheel driven by a right torque motor, a left wheel driven by a left torque motor, a steering wheel operatively connected to said driven wheels, a reservoir of hydraulic fluid, a pump drawing fluid from said reservoir and being driven by the engine of the vehicle, and circuit means delivering fluid under pressure to the torque motors and returning the fluid to the reservoir, a hydraulic differential device comprising:

means for sensing turning of the steering wheel;

and

means disposed in said circuit means for increasing the flow of fluid to one of said torque motors and simultaneously decreasing the flow of fluid to the other of said torque motors by a corresponding amount, said flow directing means being controlled by said turn sensing means such that a right turn applies increased torque to the left wheel and a left turn applies increased torque to the right wheel.

4,484,656

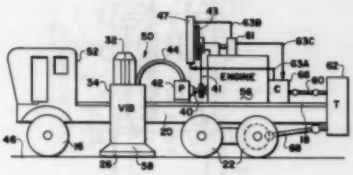
CARRIER VEHICLE FOR SEISMIC VIBRATIONAL SYSTEM

James M. Bird, Tulsa, Okla., assignor to Industrial Vehicles International, Inc., Tulsa, Okla.

Continuation-in-part of Ser. No. 151,256, May 19, 1982, Pat. No. 4,341,282. This application Jun. 25, 1982, Ser. No. 392,090

Int. Cl.³ G01V *1/04, 1/09, 1/143*

U.S. Cl. 181—114 **8 Claims**



1. In a vehicle having only a single engine, for transport and powering of a seismic hydraulic vibrator, for over-the-road use, comprising:

(a) means to carry a seismic hydraulic vibrator on said vehicle, and to drive a hydraulic pump from said single engine, for pressurizing a selected first fluid for powering said vibrator, and means to control said vibrator;

(b) gear transmission means between said single engine and the wheels of said vehicle;

the improvement in means to repeatedly rapidly start said vehicle, for short distance travel, while said engine is running continuously at or near maximum speed, comprising:

(c) an hydraulic torque converter means connected into the drive system between said single engine and said wheels; said hydraulic torque converter means capable of repeatedly starting said vehicle from rest, with said engine speed constant, at or near maximum engine speed, and constant gear ratio;

whereby said single engine operating at or near maximum engine speed alternately powers the operation of said vibrator when said vehicle is at rest, and powers operation of traversal of the vehicle over a series of new vibration points spaced at about equal short distances, at constant gear ratio.

4,484,657

ACOUSTIC PULSE GENERATOR

Henry R. Barta, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 13, 1981, Ser. No. 310,006

Int. Cl.³ G01V *1/147*

U.S. Cl. 181—121 **4 Claims**

3. An acoustic pulse generator comprising:

(a) a hollow cylindrical housing having an open top and open bottom and adapted to be supported upright above a rigid earthcontacting target;

(b) an impact piston slideably interfitted within the bore of said housing, a portion of the wall of said piston being inwardly tapered to form a reduced diameter top surface;

(c) an upright hollow cylinder operatively interconnected with the top of said housing so as to permit gas flow therebetween;

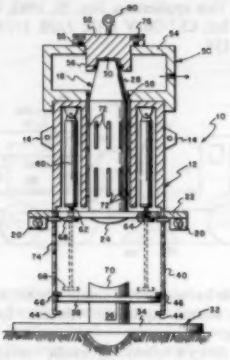
(d) a quantity of compressed gas within said cylinder;

(e) means for supporting said piston in spaced relation to said target so that said tapered wall portion extends upwardly from said housing to within said cylinder and is thereby exposed to constant downward gas pressure uniformly about its circumference;

(f) means threadably inserted in the top of said cylinder for providing a downwardly opening cylindrical enclosure above said piston into which the top of said piston is urged

slideably in such support position so as to isolate the top piston surface from said gas pressure; and

(g) means for disabling said support means, the resultant initial downward movement of said piston from within said enclosure means enabling the top surface thereof to



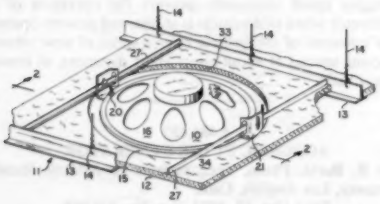
be exposed to a flow of said gas so as to produce a circumferentially uniform downward pressure thereon, thereby causing said piston to be accelerated downwardly to the target by the combined pressures on said tapered piston wall and top surface.

4,484,658

SPEKER SUPPORT ASSEMBLY

Warren H. Grote, Florissant, Mo., assignor to American Trading and Production Corporation, Baltimore, Md.

Filed Sep. 30, 1983, Ser. No. 537,675
Int. Cl.³ H05K 5/00
U.S. Cl. 181—150 **11 Claims**



10. A speaker support assembly for use with suspended ceilings of the type including a plurality of ceiling panels having upper and lower faces and a ceiling grid selectively supporting the panels comprising:

(a) a speaker baffle selectively locatable below a ceiling panel lower face,

(b) a speaker connected to the baffle and selectively extendable through the ceiling panel,

(c) bracket means including a first portion connected to the speaker and the baffle, and a second portion which is substantially perpendicular to the first portion,

(d) support rods selectively attachable to the bracket means above the ceiling panel upper face, the support rods extend substantially the width of the ceiling panel and providing support to the speaker and baffle,

(e) the bracket second portion includes a pair of opposed wing members and an interconnecting web portion, each wing member being positioned at an angle to the web,

(f) each wing member of a pair of opposed wing members including an opening, and

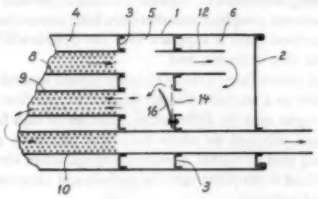
(g) the support rod being selectively received through the openings of the pair of oppposed wing members.

4,484,659

DEVICE FOR MODULATING THE FLOW OF THE GASES IN AN INTERNAL COMBUSTION ENGINE EXHAUST MUFFLER

Jean-Pierre Buchwalder, Seloncourt, France, assignor to Cycles Peugeot, Valentigney, France

Filed Sep. 24, 1982, Ser. No. 422,919
Claims priority, application France, Oct. 14, 1981, 81 19304
Int. Cl.³ F01N 1/08
U.S. Cl. 181—266 **7 Claims**



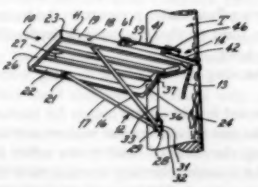
1. A device for modulating the flow of the exhaust gases in an internal combustion engine exhaust muffler, said muffler comprising a closed case and, inside the case, wall means defining a plurality of chambers, one of which chambers constitutes an open resonator, passage means which include perforated tubes and partly extend through said chambers and partly include said chambers and constitute an exhaust gas flow circuit including said resonator and having an exhaust gas discharging end, said passage means including means defining an orifice in the wall means defining said resonator for putting said resonator in communication with one of said chambers, a movable valve member cooperative with the orifice for defining a passage between said orifice and said valve member which passage is variable according to the position of said valve member, and parameter responsive means disposed within the muffler and responsive to a parameter of the exhaust gases flowing through said flow circuit, which parameter varies with the running speed of the engine, said parameter responsive means being combined with said valve member for controlling the position of said valve member relative to said orifice in accordance with said parameter, said valve member being solely operative on said orifice and leaving the rest of said circuit apart from said resonator structurally permanently unaffected thereby.

4,484,660

STAND FOR A VERTICAL POST SUCH AS A TREE

Wallace E. Baynum, Box 242, R #1, Demossville, Ky. 41033

Filed Jun. 14, 1983, Ser. No. 504,296
Int. Cl.³ A45F 3/26; A47C 9/10
U.S. Cl. 182—187 **6 Claims**



1. A tree stand comprising:

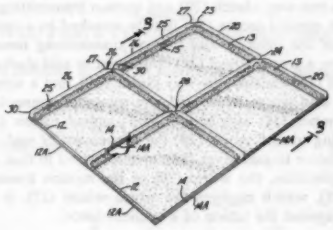
a platform having a generally horizontal top surface and a tree-engaging edge;
a pair of support struts each having a first end pivotally attached to the platform at locations spaced apart from said tree-engaging platform edge, the second ends of the struts being joined together;
a channel receiving said second ends of the struts and attached thereto, the channel for positioning adjacent the tree;
a first cable attached at a first end to the platform and at a second end to the channel to limit the movement of the channel away from the platform;
a second cable for extending around the tree opposite the platform having a first end coupled to the platform and having a second end;
a lever pivotally attached at a first location to the platform;
a drawbar having a first end pivotally attached at a second location on the lever, spaced apart from said first location, and having a second end; and
a spool fixedly mounted on the second end of the drawbar, the second end of the second cable for extension around the tree being wrapped about and retained upon the spool, the lever and drawbar having a first position for drawing the cable about the tree with a first amount of tension, and the lever being pivotable to move the lever and the drawbar to a second position for drawing the cable about the tree with a second increased amount of tension.

4,484,661

DRIP PAN FOR VEHICLES

John L. Evenson, 425-15th St. East, Willmar, Minn. 56201

Filed Apr. 7, 1983, Ser. No. 482,930
Int. Cl.³ F16N *31/00*; B65G *1/14*
U.S. Cl. 184—106 **5 Claims**



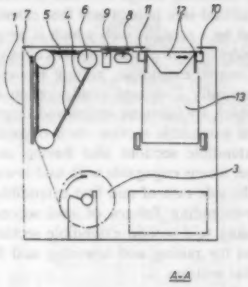
1. A drip pan for vehicles comprising a modular pan structure formed of a suitable material including a bottom wall, and peripheral walls attached to the bottom wall and formed into a generally rectilinear shape, said peripheral walls comprising a pair of spaced end walls, and a pair of spaced side walls joined to the end walls;
a first of said walls and an adjacent one of said side walls terminating along a plane to form narrow edges defined by the thickness of such walls;
a second of said end walls and a second of said side walls opposite from the first mentioned end and side walls, respectively, each having an arched lip formed thereon which extends outwardly from the wall and has a convex curved upper surface so that the outer edge of the lip extends laterally outwardly from the wall to which it is attached and turns downwardly slightly; and
said lips being of sufficient size so that they may be placed over the first mentioned end and side walls of other pans to form a modular pan unit with the gap between the pans along the first mentioned edge and side walls of such other pans covered by the lips of a first pan.

4,484,662

METHOD AND APPARATUS FOR HANDLING BAGS AT A CHECK-OUT COUNTER

Bjarne G. Busch, Lövhagsgatan 85, Postbox 13033, S-720 13 Västeras, Sweden

Filed Aug. 23, 1979, Ser. No. 69,093
Claims priority, application Sweden, Feb. 24, 1978, 7802145
Int. Cl.³ B65B *67/12*
U.S. Cl. 186—66 **8 Claims**



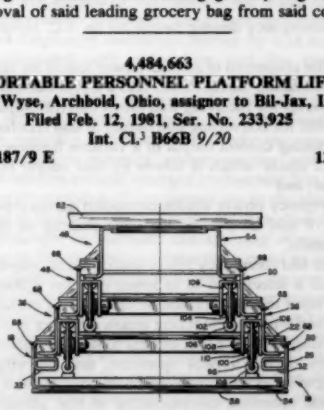
1. A method for automatically handling grocery bags at a checkout counter comprising the steps of :
advancing a strip of separable, interconnected grocery bags in which the top edges of one grocery bag are connected to the bottom of a following grocery bag forward over the edge of an open container, the bottom of the leading bag of said strip being lowered during said forward advancement into said container;
interrupting the advancing of said strip when the top edges of said leading bag approach a front edge of said container, said leading bag then hanging down into said container;
holding said strip stationary during the interruption of said strip advancement at a position removed from said leading bag and pulling said leading bag from said held strip to separate it therefrom;
moving the sides of said leading grocery bag apart and holding said sides apart such that the mouth of said leading bag is held open in the direction of said container opening to permit introduction of articles into said bag; and,
releasing the sides of said leading grocery bag to permit removal of said leading grocery bag from said container.

4,484,663

PORTABLE PERSONNEL PLATFORM LIFT

Mark R. Wyse, Archbold, Ohio, assignor to Bil-Jax, Inc.

Filed Feb. 12, 1981, Ser. No. 233,925
Int. Cl.³ B66B *9/20*
U.S. Cl. 187/9 E **12 Claims**



11. A portable personnel platform lift comprising a base, a

base section extending upwardly from said base, said base section having side rails with inwardly-extending flanges, a first extendible, nesting section having two side rails of generally Z-shaped configuration in transverse cross section, each of said side rails of said first section having an outwardly-extending flange, means engageable with the outwardly-extending flanges of said first extendible section and the inwardly-extending flanges of said base section for guiding said first extendible section in a linear path, each of said side rails of said first extendable section also having an inwardly-extending flange, said outwardly-extending flange and said inwardly-extending flange of each of said side rails of said first extendable section being connected by a straight web which is perpendicular to each of said flanges of each of said side rails of said first extendable section, a second extendible, nesting section having two side rails of generally Z-shaped configuration in transverse cross section which are identical in size and shape to said side rails of said first extendible section, each of said side rails of said second extendible sections also having an outwardly-extending flange, means engagable with said inwardly-extending flanges of the side rails of said first extendible section and said outwardly-extending flanges of said second extendible section for guiding said second extendible section in a linear path, and means for raising and lowering said first and said second extendible sections.

4,484,664

EMERGENCY DRIVE DEVICE FOR AN A.C. ELEVATOR

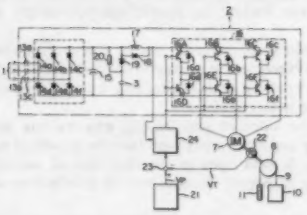
Masami Nomura, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1982, Ser. No. 410,598

Claims priority, application Japan, Aug. 25, 1981, 56-133026

Int. Cl.³ B66B 5/02

U.S. Cl. 187—29 R **3 Claims**



1. An emergency driving device for an A.C. elevator comprising:

a rectifier connected to an A.C. power source for converting an alternating current input into a direct current output;

and inverter for receiving said direct current output of said rectifier for converting said output of said rectifier into an alternating current output of a variable frequency;

an A.C. motor which is driven by said output of said inverter; and

an emergency power source connected across input terminals of said inverter in the same polarity as said input terminals;

wherein said emergency power source has an output voltage which is selected to be to lower than the voltage across said input terminals of said inverter during normal operation and wherein a blocking means is further provided for blocking the flow of the current to said emergency power source during normal operation, said blocking means being in series with said emergency power source and said normal operation corresponding to that period of time when said A.C. power source if providing alternating current to said rectifier.

4,484,665

BRAKE ADJUSTER

Sten-Eric Svensson, Päronvägen 26, S-262 00 Ängelholm, Sweden

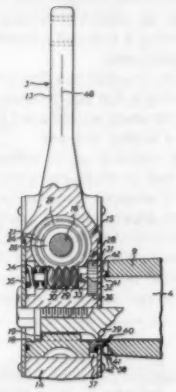
PCT No. PCT/SE81/00344, § 371 Date Jul. 7, 1982, § 102(e) Date Jul. 7, 1982, PCT Pub. No. WO82/01922, PCT Pub. Date Jun. 10, 1982

PCT Filed Nov. 26, 1981, Ser. No. 396,906

Claims priority, application Sweden, Nov. 26, 1980, 8008257

Int. Cl.³ F16D 65/56

U.S. Cl. 188—79.5 K **8 Claims**



1. Adjuster for the automatic adjustment of vehicle brakes, said adjuster (3) having a lever (13) connected to an actuator (2, 1) and, via slack adjusting means (15), to drive means (4, 5) for brake application, said slack adjusting means (15) cooperating, via a one-way clutch (20) and motion transmitting means (28), with control means (38) fixedly attached to a stationary part (9) of the vehicle, said motion transmitting means (28) comprising a worm wheel (27) connected to said slack adjusting means (15) via said one-way clutch (20), and a worm (29) engaging said worm wheel and non-rotatably connected to a drive member (31) attached to said control means (38) for transmitting to said worm (29) the movement of said control means relative to said lever (13), characterized in that, during brake application, the worm (29) of the motion transmitting means (28), which engages the worm wheel (27), is axially movable against the action of a resilient force.

4,484,666

ELECTROMAGNETIC SLIDING SHOE BRAKE

Guenter Steinmetz, Grafing b.Mch.; Walter Brezina, Munich, and Ulf Steenbeck, Putzbrunn, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 217,254, Dec. 17, 1980, abandoned. This application Nov. 12, 1982, Ser. No. 440,807

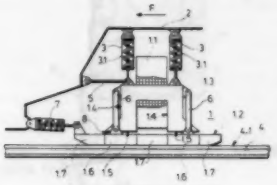
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1980, 3001235

Int. Cl.³ B60L 7/00

U.S. Cl. 188—165 **5 Claims**

1. An electromagnetic sliding shoe brake apparatus for applying a predetermined brake force to a take-up member, comprising magnetic core means (1.3; 1.4) including pole piece means with respective pole faces (1.5), electric energizing magnetic coil means (1.1) operatively arranged for energizing said magnetic core means (1.3; 1.4), sliding brake shoe means (1.2) operatively arranged between said pole faces (1.5) and said brake force take-up member (4) for applying said predetermined brake force to said brake force take-up member (4), said sliding brake shoe means (1.2) comprising ferromagnetic pole

plates (1.6) and magnetically insulating members (1.7), at least one of which is interposed between adjacent pole plates (1.6) interconnecting said ferromagnetic pole plates (1.6) to form said brake shoe means so that magnetically insulating members alternate with said pole plates, first connecting means (6) operatively securing said brake shoe means (1.2) to said core means for movement back and forth between a first position in which the pole plates are substantially in register with the respective pole faces and a second position in which the registering between the pole faces and the respective pole plates is reduced, whereby the magnetic resistance for the magnetic flux is varied as a function of said movement for varying the magnetic force,



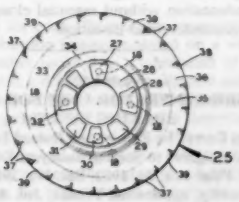
said movement taking place in a substantially frictionless manner, support means (2) for said magnetic core means (1.3; 1.4) and resilient means securing said magnetic core means thereto, and second connecting means (7) including spring means (7) biased in accordance with a required minimum brake force operatively connecting said sliding brake shoe means (1.2) to said support means (2), whereby said sliding brake shoe means (1.2) are displaceable in response to friction between the brake shoe means and the brake force take-up member (4) against the effect of said spring means (7), so that the electromagnetic attraction forces are automatically adjusted in accordance with the change in friction between the brake shoe means (1.2) and the take-up member (4).

4,484,667

SHIELD PLATE IN WHEEL AND DISC BRAKE ASSEMBLY

Joseph B. Bottieri, Jr., 1111 Crandon Blvd., Key Biscayne, Fla. 33149

Filed Sep. 27, 1982, Ser. No. 424,155
Int. Cl.³ F16D *65/00*
U.S. Cl. 188—218 A **5 Claims**



1. In combination with

a vehicle wheel having an annular tire support rim and a spider extending inward from the rim transverse to the axis of the wheel, said spider having a plurality of openings therein spaced inward from the rim, and

a disc brake having a caliper with a brake pad and a brake rotor clamped to the wheel spider and carrying a brake disc spaced axially inboard from the wheel spider and facing the spider,

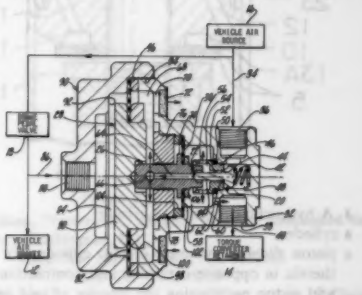
the improvement which comprises a shield plate clamped between the wheel spider and the brake rotor axially outboard from the brake disc, said shield plate radially outward from its clamping engagement with the brake rotor covering the axially inboard side of the wheel spider to prevent the escape of friction-generated braking dust from the brake through the wheel spider onto the wheel at the axially outboard side of the wheel spider, and said shield plate having a circular peripheral edge which slidably engages the inside of the wheel at said tire support rim and circumferentially spaced slits extending inward from said peripheral edge to provide flexible and resilient fingers in succession along the periphery of the shield plate.

4,484,668

CONTROLLER FOR VEHICLE RETARDER

Felton Williamson, Jr., Fraser, Mich., assignor to Master Pneumatic-Detroit, Inc., Sterling Heights, Mich.

Filed Jun. 13, 1983, Ser. No. 503,531
Int. Cl.³ F16F *11/00*; B60K *41/20*
U.S. Cl. 188—271 **21 Claims**

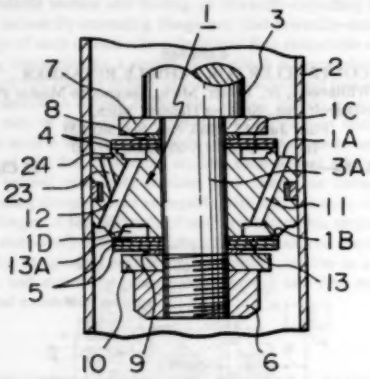


1. A controller for a retarder of a vehicle having a source of compressed gas, gas actuated brakes, and a brake valve for applying and releasing the brakes, comprising; a body; a first valve carried by said body, movable to open and closed positions, and constructed and arranged when opened to couple the source to the retarder to apply compressed gas to the retarder and when closed to decouple the retarder to prevent further compressed gas from the source from being applied to the retarder; a second valve carried by said body, movable to open and closed positions, and constructed and arranged when opened to couple the retarder for bleeding from the retarder compressed gas applied to the retarder and when closed to decouple the retarder to prevent bleeding of the retarder; first and second diaphragm assemblies carried by said body and operably associated with said valves; said first diaphragm assembly being constructed and arranged to move said first valve to its open position in response to initial application by the brake valve of compressed gas to the brakes; said second diaphragm assembly also being operatively associated with said first diaphragm assembly, communicating with the retarder, and constructed and arranged to close said first valve in response to the applying of compressed gas to the retarder by the opening of said first valve when the force produced on said second diaphragm assembly by the applying of such compressed gas to the retarder is substantially equal to the force produced on said first diaphragm assembly by the compressed gas applied to the brakes, said second diaphragm assembly also being constructed and arranged to open said second valve to bleed the retarder when said first valve is closed and the force produced on said second diaphragm assembly by the compressed gas applied to the retarder is greater than the force produced on said first diaphragm assembly by the compressed gas applied to the brakes, whereby the controller applies and disengages the retarder in response to the applying and releasing of the air brakes of a vehicle by the brake valve.

4,484,669
HYDRAULIC DAMPER

Tetsuo Kato, Kanagawa, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Filed Apr. 20, 1982, Ser. No. 370,261
Claims priority, application Japan, Apr. 25, 1981, 56-59990[U]
Int. Cl.³ F16F 9/48
U.S. Cl. 188—282 1 Claim



1. A hydraulic damper comprising:

a cylinder;

a piston slidably mounted in said cylinder for movement therein in opposite extension and contraction directions, said piston partitioning the interior of said cylinder into two liquid chambers;

first and second sets of passages extending through said piston and opening on opposite end surfaces of said piston;

first and second damping valve discs mounted on respective said end surfaces and cooperating respectively with said first and second passages to enable damping fluid flow through said first passages and to block fluid flow through said second passages upon movement of said piston in said extension direction, and to block fluid flow through said first passages and enable damping fluid flow through said second passages upon movement of said piston in said contraction direction;

orifice means for permanently communicating said two liquid chambers and defining damping means during low velocity movement of said piston in either of said directions, said orifice means comprising at least one opening formed in an annular plate forming a portion of one of said valve discs;

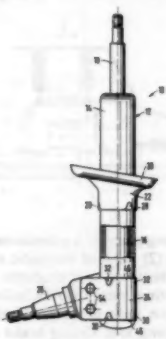
means for reducing the damping force through said orifice means upon movement of said piston in one said direction compared with the damping force through said orifice means upon movement of said piston in the other said direction, said damping force reducing means comprising a restricting member disposed contiguous to said annular plate and normally covering a portion of said opening, said restricting member being maintained in position covering said portion of said opening upon movement of said piston in said other direction, and said restricting member having a greater flexibility than said annular plate and being deflectable to uncover a further portion of said opening and thereby increase the size of said orifice means upon movement of said piston in said one direction; and

said at least one opening comprising a plurality of cutouts in the outer peripheral portion of said annular plate, and said restricting member being connected to the outer circumference of said one valve disc and partially covering the outer circumference of said annular plate.

4,484,670
VIBRATION DAMPER ARRANGEMENT PARTICULARLY FOR A SHOCK ABSORBER STRUT

Ludwig Axthammer, Hambach, and Felix Wössner, Schweinfurt, both of Fed. Rep. of Germany, assignors to Fichtel and Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Feb. 4, 1982, Ser. No. 345,698
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1981, 3105170
Int. Cl.³ F16F 9/54; B60G 15/06
U.S. Cl. 18—322.191 18 Claims



1. A vibration damper assembly comprising a vibration damping mechanism formed with a piston-and-cylinder construction having an axis and including a coaxially extending cylindrical pipe jacket, at least one fitting element embracing said pipe jacket, said pipe jacket including at least one radially inwardly directed indentation extending only over part of the circumference of said pipe jacket and being spaced apart from both axial ends of said jacket tube, said fitting being formed wtih at least one projection corresponding with said at least one indentation, said projection engaging into said corresponding indentation of said pipe jacket whereby said fitting element is essentially rigidly affixed to said pipe jacket, wherein the region of said pipe jacket defined by said indentation has a contour length 2 L extending in the circumferential direction of said pipe jacket, said contour length 2 L corresponding to a contour length 2 B of said region before deformation thereof to form said indentation without essential elongation of said region in the circumferential direction.

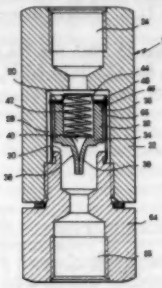
4,484,671
PRESSURE GENERATOR UNIT FOR HYDRAULIC BRAKING SYSTEM

Jean-Jacques Carré, Le Raincy, and Roland Levrai, Stains, both of France, assignors to Societe Anonyme DBA, Paris, France

Filed Jun. 24, 1982, Ser. No. 391,626
Claims priority, application France, Jul. 8, 1981, 81 13385; Sep. 16, 1981, 81 14478
Int. Cl.³ B60T 17/00
U.S. Cl. 188—352 16 Claims

1. A pressure generator unit for the hydraulic braking system of a motor vehicle, including a pressure source, a valve for maintaining residual pressure and inserted in a conduit connecting said source to at least one brake motor of said vehicle, said valve comprising a housing provided with an inlet orifice in connection with said source, an outlet orifice to be connected to said motor, a chamber between said orifices and a valve seat located near said outlet orifice, a closure element being mounted in said chamber opposite said seat and for being urged by resilient means into sealing engagement with said seat, characterized in that the valve includes temporary retaining means holding off the force of said resilient means and preventing said sealing engagement, said temporary retaining

means being responsive to at least the presence of brake fluid in said chamber to release irreversibly said resilient means which



thereafter urges said closure means into sealing engagement with said valve seat.

4,484,672

SYSTEM FOR CONTROLLING AN ELECTRO-MAGNETIC CLUTCH FOR AUTOMOBILES

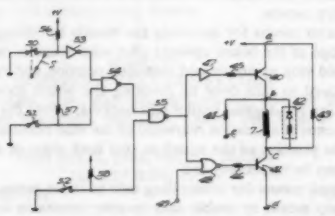
Toshio Takano, and Ryuzo Sakakiyama, both of Tokyo, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1981, Ser. No. 263,319

Claims priority, application Japan, Jul. 28, 1980, 55-103326; Aug. 9, 1980, 55-109645

Int. Cl.³ B60K *41/22*

U.S. Cl. 192—3.56 12 Claims



1. In a system for controlling an electro-magnetic clutch of an internal combustion engine mounted on a vehicle, which has a drive member secured to a crankshaft of said internal combustion engine, a driven member adjacent said drive member, a transmission secured to said driven member and having multi-stage change gears and a shift lever therefor, a magnetizing coil provided in one of said members, and an electric circuit means including said magnetizing coil which is capable of passing excitation current through said magnetizing coil in a normal direction, the improvement comprising

shift lever switch means for producing an output signal having one logic level during a shifting operation of the shift lever of said transmission,

a neutral switch means for producing an output signal having one logic level in a neutral position of the shift lever,

logic circuit means responsive to said output signals of said shift lever switch means and said neutral switch means for providing an output signal having logic levels,

said electric circuit means being responsive to said output signal of said logic circuit means for controlling the current flowing through said magnetizing coil,

said electric circuit means being so arranged that the current flows through said magnetizing coil with inverted polarity when the output signal from said logic circuit means has one logic level in the neutral position of said shift lever and that the excitation current flows through said magnetizing coil in said normal direction when the output signal of said logic circuit means has another logic level in response to opening of said shift lever switch means in an engaged condition of the change gears respectively and respectively closing of the neutral switch means when vehicle speed is greater than a predetermined speed for causing a double clutch operation,

a car speed detecting means for providing an output signal in a low speed range lower than said predetermined speed, and

said electric circuit means is so arranged that the current flows through said coil with the inverted polarity when the output signal of said car speed detecting means occurs in said low speed range and said shift lever is in said neutral position, and respectively during the shifting operation of said shift lever.

4,484,673

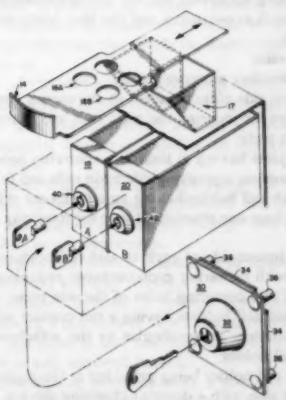
COIN DIVERTER

M. Roy Cohen, Warren, Vt., assignor to Solon Automated Services, Inc., Washington, D.C.

Filed Sep. 30, 1982, Ser. No. 429,465

Int. Cl.³ G07F *5/06*

U.S. Cl. 194—1 G 7 Claims



1. A coin diverter for coin operated machines comprising:

a housing;

a coin slide slidably positioned within said housing having a plurality of coin slots, for receiving coins, arranged in two rows to automatically divide the coins into two shares;

two coin receiving boxes, each of said boxes removably secured within said housing by an individual, unique locking mechanism;

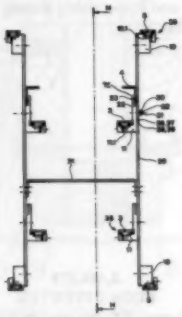
said coin receiving boxes positioned below said coin slide within said housing so that when said coin slide is pushed into said housing the coins in one of said rows of coin slots are deposited into one of said coin receiving boxes and coins in the other of said rows of coin slots are deposited directed into the other of said coin receiving boxes.

4,484,674

GUIDING APPARATUS FOR THE TRAVEL ELEMENTS OF ENDLESS CONVEYORS, SUCH AS ESCALATORS AND THE LIKE

Gerhard Lunardi, and Gerhard Wipp, both of Vienna, Austria, assignors to Inventio AG, Hergiswil, Switzerland

Filed Nov. 30, 1981, Ser. No. 325,929
Claims priority, application Switzerland, Dec. 23, 1980, 9514/80
Int. Cl.³ B66B 9/12
U.S. Cl. 198—332 7 Claims



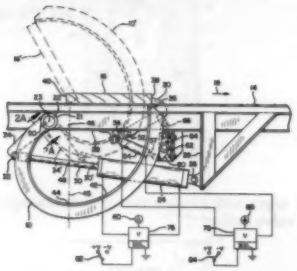
1. A guiding apparatus for the travel elements of endless conveyor, such as escalators and the like, comprising:
main rails;
follower rails;
means providing a carrier frame;
at least one side plate attached to the carrier frame;
rail holders for securing the main rails and follower fails to the side plate;
said side plate having at least two centering holes;
said rail holders supporting said main rails and follower rails and each rail holder having an attachment side provided with at least one attachment hole for receiving attachment means;
said attachment side of each of said rail holders being provided with centering protuberances engaging in related ones of said centering holes of the side plate;
each of said rail holders having a rail contact side disposed approximately perpendicular to the attachment side of such rail holder;
each said rail holder being provided at the region of its rail contact side with a dovetail clamping device;
said dovetail clamping device serving to receive an underside of the rail supported by said rail holder and which underside possesses a substantially dovetail-shaped profile;
said dovetail clamping device comprising a fixed clamping jaw arranged at the rail holder and a detachable clamping jaw which can be releasably secured at such rail holder;
each rail holder being provided at its attachment side with a substantially finger-shaped prolongation and a protuberance means;
a counter-guide having a recess; and
said protuberance means of said rail holder engaging into the recess of said counter-guide and clamping the counter-guide between the protuberance means and the related side plate.

4,484,675

BOARD TURNER APPARATUS AND METHOD CAPABLE OF MULTIPLE TURN INSPECTION

Ralph D. Doherty, and French O. Weldon, both of Jacksonville, Fla., assignors to U. S. Natural Resources, Inc., Portland, Oreg.

Filed Dec. 13, 1982, Ser. No. 449,459
Int. Cl.³ B65G 47/24
U.S. Cl. 198—413 18 Claims



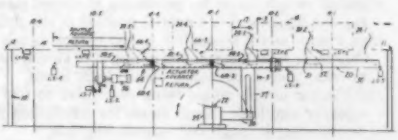
1. A board turning apparatus, comprising:
conveyor means for conveying a plurality of boards in a direction transverse to the lengths of the boards;
retractable stop means for engaging the front edge of one of the boards at a fixed stop position on said conveyor means to stop forward movement of the board in an extended position of said stop means, and for releasing the board to enable said board to be moved forward by said conveyor means past said stop means in a retracted position of said stop means;
inverter means for inverting the boards by lifting the front edge of the board upward after said board is engaged by said stop means in said extended position and causing the board to turn over by pivoting the board about its rear edge 180 degrees until it falls backward onto the conveyor means at a location rearward of the stop position to invert the position of the board so that both sides of said board may be inspected; and
control means for controlling said inverter means and said stop means to enable said inverter means to invert each board several times before said stop means is moved to said retracted position to allow said board to be advanced forward beyond said stop means by said conveyor means.

4,484,676

ACCUMULATING SHUTTLE CONVEYOR

Robert W. Plumridge, Garden City, and James H. Patrick, Redford, both of Mich., assignors to Centri-Spray Corporation, Livonia, Mich.

Continuation of Ser. No. 267,561, May 27, 1981, abandoned.
This application Jun. 29, 1983, Ser. No. 508,993
Int. Cl.³ B65G 25/00
U.S. Cl. 198—718 19 Claims



1. An accumulating shuttle conveyor comprising:
a frame having a loading end and an unloading end;
means carried by the frame for supporting articles at succes-

sive equally spaced stations between the loading and unloading ends, including

a loading station adjacent to the loading end, a second station adjacent to the loading station, an unloading station adjacent to the unloading end, and

a plurality of intermediate accumulating stations including an upstream station following the second station and a downstream station preceding the unloading station;

a shuttle mechanism movably supported by the frame, and drive means normally operable for moving the shuttle mechanism on return and advance strokes between advance and return positions, each stroke having a length corresponding to the spacing between successive stations;

a series of articles advancing dogs mounted along the shuttle mechanism at a spacing between successive dogs corresponding to the spacing between successive stations, each dog being movable between an article advancing position and a non-advancing position;

means for setting all dogs in article advancing position on the return stroke of the shuttle mechanism;

accumulation means for resetting the dogs at said accumulating stations in non-advancing position in response to the presence of articles thereat, said accumulation means including an actuator bar reciprocatably mounted on the frame at each of said accumulating stations to form a series of actuator bars extending from said downstream accumulating station to said upstream accumulating station;

actuating means for operating said accumulation means in an accumulation cycle independently of the operation of the drive means for moving the shuttle mechanism, said actuating means moving the actuator bar at said downstream accumulating station on an advance motion and a return motion in each said accumulation cycle; and

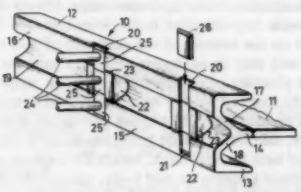
control means for initiating an accumulation cycle of operation of said accumulation means between successive strokes of said shuttle mechanism in response to the presence of articles at least at said uloading station and at said downstream accumulating station.

4,484,677

SCRAPER-CHAIN CONVEYORS

Werner Berwald, Selm, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Jun. 1, 1982, Ser. No. 383,548
Int. Cl.³ B65G *19/28*
U.S. Cl. 198—735 **9 Claims**



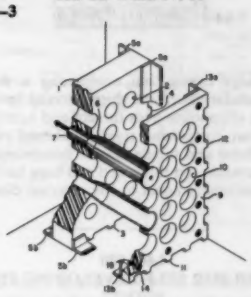
1. A conveyor channel section or pan comprising shaped side walls adjoined by a floor plate, the side walls being generally sigma-shaped with external central V-shaped grooves extending longitudinally thereof and upper and lower webs adjacent the V-shaped grooves, inserts fixed into the V-shaped external groove of at least one of the side walls to substantially fill the groove over longitudinally spaced-apart zones, upstanding elongate grooves extending over substantially the entire height of said one side wall and being located at the zones to extend through the inserts and through the upper and lower webs of the side wall, and sealing pieces closing off the upstanding grooves from beneath, wherein the upstanding grooves are re-entrant in shape to lock with the heads of screw-threaded fixing elements which are shaped to correspond therewith, with each of the grooves being open upwardly of said one side wall and being capable of receiving a plurality of said heads.

4,484,678

AMMUNITION RACK FOR VEHICLES

Evan H. Walker, Aberdeen; Gould Gibbons, Jr., Finksburg, and Gilbert A. Bowers, Aberdeen, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 5, 1983, Ser. No. 482,360
Int. Cl.³ F42B *37/00*
U.S. Cl. 206—3 **5 Claims**



1. In an improved ammunition supportive rack for a tank adapted to hold a plurality of fragile 120 MM combustible shells in an explosive environment in order to protect said shells from fratricide and road shock, the improvement consisting essentially of:

a plurality of 120 MM combustible shells having a warhead and a base with a fragile explosive body therebetween,

a warhead block-mount fixture molded of resilient polymeric material having a plurality of supportive holes therethrough,

said warhead fixture having molded integrally therewith a plurality of flanges inwardly directed into each of said holes and adapted to separably engage said warhead of said shell as a shock-mount,

a base block-mount fixture positioned in spaced relation parallel to said warhead fixture,

said base-fixture molded of resilient polymeric material and having a plurality of holes therethrough,

each of said holes in said base fixture axially aligned with a hole in said warhead fixture,

said base-fixture provided with a plurality of pivotal latches adjacent each of said holes to separably engage said base of said shell to secure the same in a supportive position

a plurality of metal tubular sleeves member having two ends and a body,

one of said ends removably positioned in a hole in said warhead fixture and the other of said ends removably positioned in said base fixture with said body extending therebetween,

each of said sleeves adapted to removably support said combustible shells,

each of said sleeve member removably secured in said fixtures by

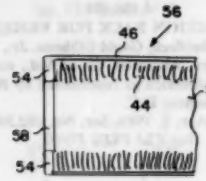
a spring clip provided on said sleeve and engaging said warhead fixture.

4,484,679

PACKAGED SHEATHED TUBULAR STRANDS AND METHOD AND APPARATUS FOR MAKING SAME

J. Alfons F. Liekens, Olen, and Ivo G. M. Hendriks, Overpelt, both of Belgium, assignors to Teepak, Inc., Oakbrook, Ill.

Filed Dec. 16, 1981, Ser. No. 331,404
Int. Cl.³ B65D 85/08; F16L 11/08, 11/10
U.S. Cl. 206—303 4 Claims



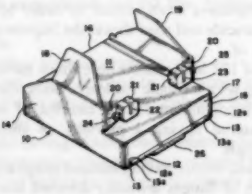
1. In a sausage casing unit comprising a shirred strand wrapped in a tubular sleeve, the shirred strand having a tubular sidewall, edges at opposite ends thereof and a central opening, the improvement comprising rigid, thickened end-caps integrally formed from said tubular sleeve compressing the edges of the shirred strand, said thickened end-caps having an external diameter essentially equal to the external diameter of the shirred strand.

4,484,680

CONTAINER FOR SELF DEVELOPING FILM AND PRINTS

Bill R. Olsen, 2650 W. 220 North, Provo, Utah 84601

Filed Apr. 12, 1984, Ser. No. 599,479
Int. Cl.³ G03B 17/56; B65D 85/00
U.S. Cl. 206—455 20 Claims



1. A container assembly attachable to the body of an instant camera such that the container is adjacent to and underlies the lower surface of said instant camera and is adapted to hold packs of unexposed film or developed prints which comprises:

(a) a generally rectangular housing consisting of an upper panel, a lower panel, sidewalls, a front endwall and a rear endwall, all of which are contiguous with each other with said panels, sidewalls and endwalls, each being parallel,

(b) door means contained in an endwall or lower panel or said housing to allow access into the interior thereof,

(c) attachment means contained on said housing for attaching said container assembly to the body of an instant camera.

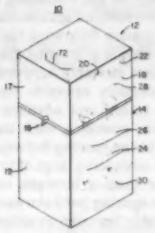
4,484,681

PACKAGE FOR CARDED MERCHANDISE

Peter A. Consiglio, Jr., Worcester, Mass., assignor to Parker Metal Corporation, Worcester, Mass.

Filed Sep. 15, 1983, Ser. No. 532,372
Int. Cl.³ B65D 85/62, 65/26
U.S. Cl. 206—499 10 Claims

1. An improved package for carded merchandise comprising: a collapsible box including generally vertical first and second opposing side walls, a bottom wall extending between said first and second side walls and attached directly thereto at first and second fold lines, a top wall connected directly to said first side wall along a third fold line, means for attaching said



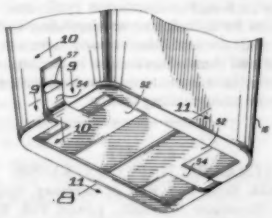
top wall to said second side wall, means for releasably interconnecting said top wall and said second wall, and an open front.

4,484,682

CONTAINER WITH MAGNET FOR HOLDING IT IN POSITION

Robert T. Crow, 3407 E. Laurel La., Phoenix, Ariz. 85028

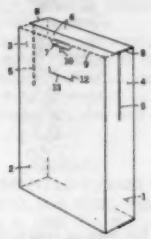
Filed Jun. 6, 1983, Ser. No. 501,496
Int. Cl.³ A45C 11/20
U.S. Cl. 206—545 10 Claims



1. A portable container for use by construction workers to carry food and miscellany comprising a hollow body having side and bottom walls and a top opening, the walls of said body being insulated to resist the transmission of heat therethrough, a removable tray adapted to be stored in said body, means provided on the interior of the sidewalls of said body for supporting said tray in an upper region of said body, said tray having a plurality of compartments therein adapted to snugly receive the items of food or miscellany, a lid structure hingedly mounted on said body for closing and opening the opening of said body, said lid structure being insulated to resist the transmission of heat therethrough, means for locking said lid structure in closed position on said body, means providing a handle for carrying the container, and magnet means carried by the bottom wall of said body for holding said container in position on a magnetically attractable structure, said magnet means having a lower face directed toward said attractable structure, said magnet means including movable means for reducing the attractive force thereof to facilitate removal of the container from said attractable structure, said movable means including at least one shunt shield for shunting the magnetic field of said magnet means when positioned between the lower face of said magnet means and said attractable structure, said at least one shunt shield being movably secured to the bottom wall of said body between a first position overlying the lower face of said magnet means to reduce the attractive force between said magnet means and said attractable structure and a second position withdrawn from the lower face of said magnet means for exposing the lower face thereof and allowing said magnet

means to exert its maximum attractive force upon said attractive structure.

4,484,683
RECLOSABLE CARTON
August C. Werner, Jr., St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo.
Filed Feb. 19, 1982, Ser. No. 349,956
Int. Cl.³ B65D 5/54
U.S. Cl. 206—624 **3 Claims**



1. A reclosable carton and liner comprising: front and rear panels, connected by side panels whose upper portions are scored along vertical lines midway between the vertical edges of the side panels, a top closure flap secured to the front panel and connected to the side and rear panels with perforations, a tab secured to said flap which is connected to the rear wall by perforations, said rear wall having a perforated slot spaced axially downwardly from said tab, said carton having a liner with a fold over flap whereby upon closure of said carton, said side panels fold inwardly along said score lines to permit the uppermost portions of the side and rear panels to lie against one another and create a common edge with the top edge of the rear panel whereby the liner fold over flap is folded over the top edge of the rear panel and the flap of the carton is folded rearwardly over the common edge to permit insertion of the tab into the slot in the rear panel of the carton thereby resealing the carton and liner, wherein said rear panel has a die cut perpendicular to the line formed by connection of the tab to the rear panel to permit separation of the top flap from the carton by exerting pressure at the die cut to open the top of the flap and exerting an upward pressure to separate the top flap from the carton said die cut being spaced axially above and substantially apart from said perforated slot.

4,484,684
PARTS SEPARATOR
Merritt D. Tetreault, 248 Yew St., East Douglas, Mass. 01516
Filed May 17, 1982, Ser. No. 378,620
Int. Cl.³ B07C 9/00
U.S. Cl. 209—616 **11 Claims**

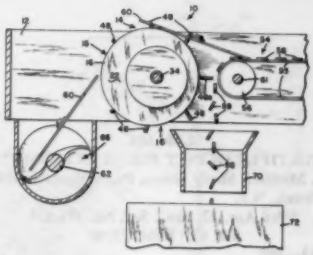
11. Parts separator for separating molded plastic parts from their relative elongated sprue-runner elements, comprising:

(a) a supporting frame,

(b) an outer separator element, including a hollow drum mounted for rotation relative to the frame about a first horizontal axis, said drum including an outer annular wall having an outer annular surface which is concentric with said first axis and a plurality of spaced apertures extending through the wall,

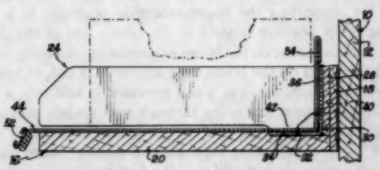
(c) an inner separator element located within the drum and mounted for rotation relative to the frame about a second horizontal axis which is parallel with and spaced from the first horizontal axis, said inner separator element including a plurality of elongated pins which extend laterally from said second horizontal axis, said inner and outer separator elements being drivingly interconnected for simultaneous and synchronous axial rotation through at least some of said pins, each of said pins having a free outer end which extends through a respective one of said apertures, so that rotation of said outer and inner separator elements about said first and second horizontal axes, respectively, causes the outer end of each pin to reciproate relative to the outer surface of the drum from an inner position in which said outer end is substantially flush with said outer surface to an outer position which said outer end extends substantially beyond said outer end surface,

(d) drive means including a drive shaft which is rotated about its central longitudinal axis and which extends through the outer and inner separator elements, the central longitudinal axis of said drive shaft being coaxial with said second horizontal axis, said drive shaft being operatively connected to said inner separator element for rotating said inner separator element about said second horizontal axis and thereby causing said inner separator element to rotate said outer separator element about said first horizontal axis of rotation, so that each pin reaches its inner position when it is descending and its outer position when it is ascending, and



(e) a conveyor for delivering molded plastic parts and sprue-runner elements to the ascending side of the outer surface of the drum, said conveyor being spaced from the drum so that the parts fall between the separator elements and the conveyor, and the sprue-runner elements are engaged by the ascending pins and carried to the descending side of the drum, where they fall to be collected separately from the parts.

4,484,685
MAIL SORTING RACK
James Williams, 6209 Amber Lake Ave., San Diego, Calif. 92119
Filed Feb. 16, 1982, Ser. No. 349,115
Int. Cl.³ B07C 7/02
U.S. Cl. 209—703 **8 Claims**



1. A sorting apparatus for assisting the sorting of a group of mail pieces or the like into a plurality of consecutive subgroups divided by dividers and subsequent removing the dividers from said group, said apparatus comprising:

(a) a rack having a floor and defining a plurality of forwardly projecting parallel divider blades spaced above said floor;

(b) a tray having a bottom panel which slides over said floor and a rear side sufficiently open to permit said blades to

pass therethrough when said tray is slid back onto said floor and over said blades in nesting relationship with said rack;

(c) baffle means spanning the rear side of said tray for blocking the passage of mail pieces passing therethrough, whereby said tray can be nested in said rock, mail pieces sorted between said blades, and said tray drawn clear of said rack with said mail pieces ordered and free of said divider blades; and

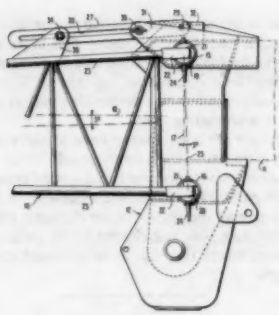
(d) said baffle means comprising a drawbar spanning said tray and spaced above said bottom panel sufficiently to permit passage of said blades thereunder.

4,484,686

MULTIPLE OFFSET BOOM EXTENSION

William R. Mentzer, Shady Grove, Pa., assignor to Kidde, Inc., Saddle Brook, N.J.

Filed Apr. 23, 1982, Ser. No. 371,133
Int. Cl.³ B66C *23/66*
U.S. Cl. 212—188 **12 Claims**



1. In a crane boom having a nose assembly including an upper support shaft and a lower rotational support shaft, a boom extension including elements near the base of the boom extension adapted for engagement with the upper and lower support shafts, disengageable connecting means securing the base of the boom extension to said upper and lower support shafts for supporting the boom extension normally in a first angular offset position relative to the center line of the crane boom, anchor means on the boom extension in proximity to the base thereof and on the boom nose assembly, a link extending between said anchor means, a slot provided in said link, a first connecting element extending through said anchor means on said boom extension and said slot, a second removable connecting element extending through said anchor means on the boom nose assembly and said slot, the first removable connecting element being spaced from one end of said slot and the second removable connecting element engaging the other end of said slot when said boom extension is disposed in said first angular offset position, said first and second connecting elements being inoperative in defining said first angular offset position, each end of said slot being respectively engaged by said first and second connecting elements to define a second angular offset position relative to the center line of the crane boom when said connecting means is disengaged from said upper support shaft.

4,484,687

TAMPER-PROOF CONTAINER CLOSURE FOR USE WITH CONTAINER NECKS SEALED WITH FOIL SEAL DISCS

Joseph J. Bullock, III, Atherton, Calif., assignor to Three Sisters Ranch Enterprises Ptnrshp, San Carlos, Calif.

Filed Jul. 27, 1983, Ser. No. 517,666
Int. Cl.³ B65D *41/48*
U.S. Cl. 215—256 **20 Claims**

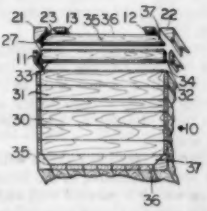
1. A plastic cap for sealing container necks having a top finish comprising a top disc having a depending skirt, said skirt having first bead means extending around the inside of said skirt spaced downward from said disc, second bead means extending around the inside of said skirt spaced downward from said first bead means, a first scoreline extending circumferentially around said skirt spaced between said first and second bead means, a second scoreline extending up from the bottom edge of said skirt and merging with said first scoreline, tear means on said bottom edge adjacent said second score line, whereby by pulling said tear means the bottom of said skirt may be torn off by tearing upward along said second scoreline and then around said first scoreline, and a seal disc underneath said top disc inside said skirt and above said first bead means, whereby when said cap is applied to said neck said seal disc fits tightly against said top finish and is sealable with said top finish so that access to said neck cannot be obtained without tearing open said seal disc, said first and second bead means being engageable with third and fourth bead means, respectively, on the exterior of said neck to prevent removal of said cap without tearing off the portion of said skirt below said first scoreline.

4,484,688

RECTANGULAR BARREL FOR AGING WHISKEY

Robert H. Smith, Louisville, Ky., assignor to Robert Henry Smith Enterprises, Inc., Louisville, Ky.

Filed Feb. 15, 1983, Ser. No. 466,510
Int. Cl.³ B65D *6/00, 6/28*; B27H *5/04, 5/08*
U.S. Cl. 217—91 **8 Claims**



6. A corner construction for use with a side wall stave section in making rectangular barrel-like containers, comprising:

A. a triangular corner member, forming a triangle in cross section, but truncated at the juncture of each of the legs of

the triangle with the base of the triangle so as to form five planar sections extending the length of said corner member,

1. one of said truncated edges of said corner member having a tongue running its entire length for engagement with a side wall section,
2. the other of said truncated edges having a groove running its length for engagement with a projecting tongue of a stave forming part of said side wall section;

B. tensioning means in operative relation with the apex of said triangle of said triangular member comprising:

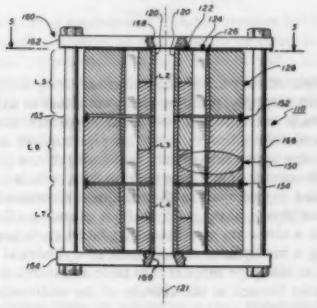
1. external bumper members with tapered ends, and
2. a metal compression strap surrounding said external bumper members and in operative relation with the apex of said triangular corner member,
3. whereby tension applied to said strap, and to the apex of said corner triangular member, is translated to forces extending at right angles so as to apply pressure to the tongue and groove engagement of the triangular member with the staves forming the side wall section.

4,484,689

AXIALLY SEGMENTED PRESSURE VESSEL

Francis J. Fuchs, Jr., P.O. Box 10016, Naples, Fla. 33940

Filed Aug. 8, 1983, Ser. No. 521,307
Int. Cl.³ B21C *27/00*; B65D *7/44*
U.S. Cl. 220—3 **3 Claims**



1. In a pressure vessel including a cylindrical liner for surrounding and containing a pressurized meduim applying radially outwardly directed pressure to said liner producing circumferential tensile stress therein and annular pressure vessel support structure surrounding and engaging said liner and applying radially inwardly directed pressure to said liner producing circumferential compressive stress therein opposing said tensile stress, said circumferential compressive stress enhancing the ability of said liner to contain said pressurized medium, said pressure vessel having a center line,

wherein the improvement comprises:

said annular pressure vessel support structure segmented axially into annular segments of a first axial length and said cylindrical liner segmented axially into cylindrical segments of a second axial length greater than said first axial length by a predetermined axial length, each liner cylindrical segment residing axially centrally of one of said pressure vessel annular segments and extending in each axial direction beyond said pressure vessel annular segment an axial length equal to substantially one-half said predetermined axial length to cause adjacent pressure vessel annular segments to be spaced apart axially a distance equal to said predetermined axial length;

a plurality of annular registration rings, each registration ring engaging predetermined outer peripheral portions of adjacent pressure vessel annular segments and for maintaining said annular segments in radial registration with said center line; and

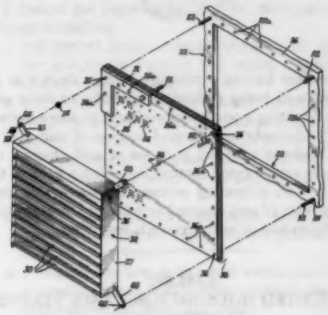
compression means for producing substantially uniform axial compressive stress in said axially segmented cylindrical liner, said axial compressive stress cooperating with said circumferential compressive stress to further enhance the ability of said liner to contain said pressurized medium.

4,484,690

FLAME ARRESTING VENTILATED WALL FOR AN EXPLOSION-PROOF ENCLOSURE

James H. Nash, Huntington, W. Va., assignor to Service Machine Co., Huntington, W. Va.

Filed Mar. 8, 1982, Ser. No. 356,180
Int. Cl.³ B65D *25/00*
U.S. Cl. 220—88 A **8 Claims**



1. A flame arresting ventilated wall for an explosion-proof enclosure comprising:

a stack of metal sheets apertured to provide a plurality of discrete, generally parallel gas flow channels extending therethrough and disposed in crisscross patterns across the heights and widths of the sheets;

said stack comprising alternate apertured and separator sheets;

fasteners disposed in crisscross patterns across the heights and widths of the sheets individually supporting and sealing said discrete gas flow channels, said fasteners extending through aligned holes in said apertured and separator sheets and effective to compress the stack into a plurality of solid columns adjacent the fasteners tying the stack together into a rigid structure resistant to deformation by explosion of gases on one side thereof while positively maintaining a predetermined spacing between adjacent apertured sheets throughout the stack;

each of said apertured sheets having, in each said gas flow channel, an array of individual openings having a predetermined total area, the individual openings in successive apertured sheets being offset from one another in directions parallel to the sheets to train gas flow therethrough into labyrinthine paths;

each of said separator sheets having, in each said gas flow channel, a window opening substantially larger than said predetermined total area and in registration with said arrays of individual openings in said apertured sheets;

whereby quenching of hot gases flowing through said wall is effected by, first, dividing the gases into separate streams through said gas flow channels, second, further breaking up and subdividing each stream and directing it in labyrinthine paths as it passes through the individual openings in the apertured sheets, and third, alternately expanding and contracting and speeding up and slowing down said gases in said flow channels as they alternately pass between the arrays of individual openings in the apertured sheets and the substantially larger area window openings in the separator sheets.

4,484,691

PRESSURE RELEASE DEVICE

Wayne L. Lees, Lexington, Mass., assignor to Duracell Inc., Bethel, Conn.

Continuation of Ser. No. 628,445, Nov. 3, 1975, abandoned. This application May 21, 1979, Ser. No. 43,515

Int. Cl.³ F16K *17/40*

U.S. Cl. 220—89 A 1 Claim

1. A container having a pressure release device in a wall thereof, said wall being deformed whereby to form channel means for permitting a portion of said wall to move outwardly, and a small relatively undeformed section of said wall being positioned between adjacent portions of said channel means, said relatively undeformed section including a groove therein with said groove extending across said section to connect adjacent portions of said channel means and wherein the inner width configuration of said groove is lenticular.

4,484,692

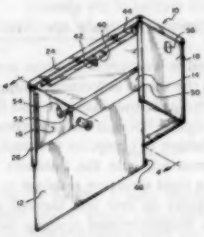
WALL MOUNTED HOUSING FOR CABLE TELEVISION COMPONENTS

Michael A. Palermo, and James L. Mason, both of P.O. Box 154, Sicklerville, N.J. 08081

Filed Oct. 19, 1983, Ser. No. 543,409

Int. Cl.³ B65D *43/20*

U.S. Cl. 220—346 10 Claims



1. A substantially rectangularly shaped housing for cable television components comprising:

a rear wall, a pair of side walls, a top wall and a bottom wall, all of said walls being rigidly secured together;

the front of said housing having an opening therein;

the forwardmost edges of each of said side walls extending slightly forwardly of the bottom wall and being turned inwardly toward said opening to form a pair of vertically extending front flanges;

a second pair of flanges mounted to the inside surface of said side walls parallel to but spaced slightly rearwardly from said front flanges to thus form a pair of opposed channel members;

a cover member for covering said opening, said cover member being substantially rectangularly shaped and having opposed side edges adapted to slide within said channel members, one of the upper corners of said cover member being removed, and

a lock member carried by the upper portion of said cover member and extending inwardly toward the interior of said housing.

4,484,693

APPARATUS FOR SUPPLYING COLUMNAR OR CYLINDRICAL ARTICLES

Takayuki Fujita, Hirakata; Yoshiaki Yoshida, Takatsuki; Toshiyuki Higashiura, Hirakata, and Kunio Tanaka, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

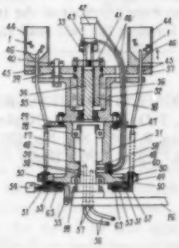
PCT No. PCT/JP81/00305, § 371 Date Jun. 28, 1982, § 102(e) Date Jun. 28, 1982, PCT Pub. No. WO82/01538, PCT Pub. Date May 13, 1982

PCT Filed Oct. 28, 1981, Ser. No. 394,935

Claims priority, application Japan, Oct. 30, 1980, 55-153505; Dec. 17, 1980, 55-179457

Int. Cl.³ B65H *5/16*

U.S. Cl. 221—119 2 Claims



1. An apparatus for supplying columnar or cylindrical articles, adapted to supply, piece by piece, columnar or cylindrical articles which are fed in a row, said apparatus being constructed to include a first turn table, a pipe support turn table coupled to the upper side of said first turn table, a shaft connected to the center of said pipe support turn table, a mounting table coupled to said shaft in the rotational direction but slidably up and down along said shaft, a plurality of hoppers arranged in a circle on said mounting table, each hopper accomodating a multiplicity of columnar or cylindrical articles, pipes fixed to said pipe support turn table and inserted into the through holes formed at the centers of the underside of said hoppers, cylindrical chutes provided on said turn table and connected to said pipes through chutes in the form of coiled springs, escapement pushers each having an article holding hole and disposed on the underside of said cylindrical chutes, a pickup chute adapted to grip an article disposed in the article holding hole of a respective escapement pusher and to remove the article therefrom, and a push lever adapted to push said each escapement pusher when said each escapement pusher is brought to a predetermined position as a result of rotation of said first turn table, thereby transferring said columnar or cylindrical article held by said article holding hole to said pickup chuck.

4,484,694

ICE CREAM CONE DISPENSER

Harry J. Reuteman; Howard B. Lampley, and Dale E. McElroy, all of Cincinnati, Ohio, assignors to Slush Puppie Corporation, Cincinnati, Ohio

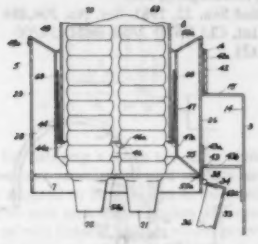
Filed Jul. 15, 1982, Ser. No. 398,345

Int. Cl.³ B65G *59/10*

U.S. Cl. 221—197 15 Claims

1. An ice cream cone dispenser for dispensing cones from a carton thereof of the type containing columns of nested cones and having an openable bottom end, said dispenser comprising a chamber having a front wall, side walls and a rear wall with an open top and an open bottom, means to support said chamber with said front, side and rear walls substantially vertical and with access to said bottom thereof, a carton adapter comprising a rectangular four-walled element receivable within said chamber and having an open top and an open bottom,

means to support said carton adapter within said chamber comprising a hook-shaped flange at the upper edge of each of said four walls of said carton adapter extending upwardly and outwardly therefrom, each of said flanges being so sized and configured as to have a hook-like engagement with the upper edge of one of said chamber walls when said carton adapter is located within said chamber to suspend said carton adapter within said chamber, said carton adapter being so dimensioned as to receive said bottom end of said cone carton in opened condition, means within said carton adapter to support said opened bottom end of said cone carton, a cone dispensing



baffle comprising a substantially planar member having cutouts therein equal in number to said columns of cones in said cone carton, said cutouts being so sized as to permit a cone to pass therethrough, a series of inwardly extending resilient fingers in association with each cutout to support its respective column of cones thereabove with the bottommost cone of said column extending partway through said cutout, said fingers being distortable so that the bottommost cone can be dispensed by being pulled through said cutout past said fingers, the remainder of said column being retained by said fingers, and means on said carton adapter to support said dispensing baffle within said chamber near said open bottom thereof.

4,484,695

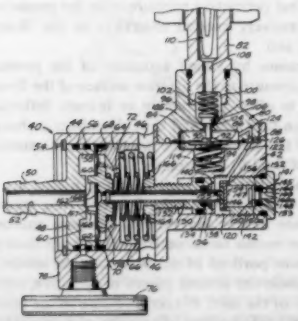
SAFETY PRESSURE REDUCING REGULATOR

Merton R. Fallon, Thousand Oaks, Calif., and Thomas W. Clements, Ambler, Pa., assignors to Draft Systems, Inc., Northridge, Calif.

Continuation-in-part of Ser. No. 119,561, Feb. 7, 1980, Pat. No. 4,349,136. This application Sep. 10, 1982, Ser. No. 416,476

Int. Cl.³ G01L *19/12*; B67D *1/12*

U.S. Cl. 222—23 **5 Claims**



1. An improved pressure regulator for disposition between a gas pressure source and a pressure vessel, said pressure regulator being characterized by having a pressure chamber normally sealed by a reusable diaphragm which is collapsible under abnormally high pressure conditions within the pressure chamber and which, for reasons of safety is only manually resetable, said pressure regulator comprising:

(a) a housing provided with a pressure control chamber therein and one or more vents to release excess pressure from said pressure control chamber;

(b) inlet means for supplying pressurized gas from said gas pressure source to said pressure control chamber, said inlet means comprising:

(1) a primary regulator stage for receiving pressurized gas from said source and reducing the gas pressure to an intermediate level; and

(2) a secondary regulator stage adapted to selectively provide communication between said first regulator stage and said pressure control chamber for maintaining a desired gas pressure therein, said secondary regulator stage including:

a. adjustment means carried interiorly of said housing for selectively varying the outlet pressure in said control chamber; and

b. safety means removably carried by said housing for blocking access to said adjustment means, said safety means including valve means for automatically venting pressurized gas from said source to atmosphere upon attempted removal of said safety means from said housing;

c. outlet means in communication with said pressure control chamber for supplying the pressurized gas to said pressure vessel;

d. a flexible diaphragm disposed within said housing for normally sealing said pressure control chamber from communication with said vents;

e. a clamping piston slidably disposed within said housing for movement between a first position and a second position and provided with a central passage in communication with said vents, said piston being normally adapted at said first position to clamp said diaphragm at its periphery and retain said diaphragm in place over said passage to preclude gas flow therethrough; and

f. bias means for normally urging said piston into clamping engagement with said diaphragm, said piston being movable against the action of said bias means upon an increase of the gas pressure in said pressure control chamber above a predetermined level to unclamp said diaphragm and allow said diaphragm to collapse into said central passage to permit the gas to escape from said pressure control chamber through said vents.

4,484,696

APPARATUS FOR AUTOMATIC BURETTING

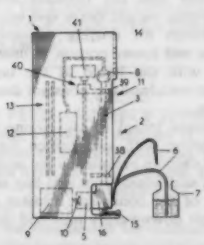
Jean Bajard, "Le Vallon" 5, rue Charles Baudelaire, Griesheim-sur-Souffel (Bas-Rhin), France

Filed Sep. 23, 1982, Ser. No. 422,476

Claims priority, application France, Sep. 23, 1981, 81 18065

Int. Cl.³ G01F *11/42*; B67D *5/30*

U.S. Cl. 222—64 **9 Claims**



1. Automatic buretting apparatus, characterized in that it

comprises an automatic buretting actuator (1) and a burette unit (2) in the form of two separable subassemblies, in that the burette unit (2) is removably mounted in the actuator (1), even when filled, while remaining sealed and closed, and is constituted by a burette (3) connected at its lower end to a valve (4) with three passages and three positions, provided with drive means (5), and which is connected to tubes (6), of which one empties into a product reservoir (7), the burette (3) being provided at its upper end with sealed pneumatic connecting means (8) which also position the burette (3), and in that the automatic buretting actuator (1) is comprised by a stepping motor (9) provided with a coupling (10) for actuating the valve (4) of the burette unit (2), by a photoelectric detection assembly (11) for the meniscus comprising a movable detector (39) driven in translation, by a pneumatic suction and pressure device (12) connected to the burette (3), by an electronic control assembly (13) provided with a control and display panel (14), and by a quick-acting lever (15) for freeing the burette unit (2) for replacement by another buretting unit.

4,484,697

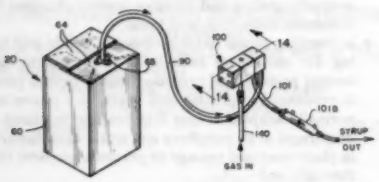
METHOD AND APPARATUS FOR DISPENSING LIQUID

Harry B. Fry, Jr., San Leandro, Calif., assignor to Shasta Beverages, Inc., Hayward, Calif.

Continuation of Ser. No. 181,914, Aug. 27, 1980, abandoned. This application Jan. 21, 1983, Ser. No. 459,705

Int. Cl.³ B65D *35/28*

U.S. Cl. 222—95 **11 Claims**



1. A system for dispensing a liquid with a partial vacuum force comprising:

a hollow container having relatively rigid sidewalls;

a collapsible bag supported within said container and having flexible and fluid-impervious walls including top and bottom portions for retaining a liquid to be dispensed;

evacuation port means provided in said top portion of the bag;

a connector member adapted to be removably received within said port means in a fluid-tight relationship and including a lower portion engageable with the liquid within the bag and defining an orifice through which the liquid may be dispensed from the bag; said member further being provided with a selected weight;

flotation means associating with the top portion of the bag and said port means, said flotation means capable of floating the port means and connector member at the surface of the liquid as it is dispensed, wherein the selected weight of the connector member and the flotation means cooperate whereby the selected weight flexes said bag and said flotation means stabilizes the floating connector member to thereby maintain said lower portion in uninterrupted fluid communication with the liquid as the liquid level falls whereby vacuum withdrawal is constant during application of vacuum force;

flexible conduit means joined to said connector member in fluid communication with said orifice for connecting a source of partial vacuum pressure to the interior of said bag for withdrawing said liquid from said bag and wherein the selected weight of the connector member is sufficient to draw said conduit downwardly into said container as said bag collapses;

whereby said system is arranged to withdraw substantially all of the liquid from the bag by maintaining the lower portion of said connector member in constant fluid communication with the liquid as said liquid is being evacuated and as said bag walls collapse in response to flexure by said selected weight and liquid withdrawal by said partial vacuum pressure.

4,484,698

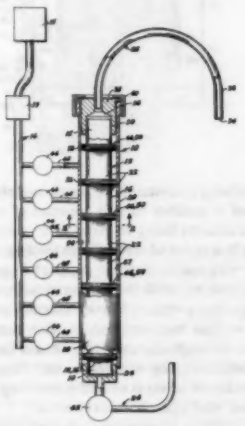
ULTRA MICRO PRECISION FLUID METERING DEVICE

Maurice Starr, Indianapolis, Ind., assignor to American Monitor Corporation, Indianapolis, Ind.

Filed Sep. 22, 1981, Ser. No. 304,384

Int. Cl.³ B67D *5/60*; B65D *37/00*

U.S. Cl. 222—131 **11 Claims**



1. A precision fluid metering device, comprising, in combination:

a Bourdon tube means, comprising a tube formed of elastic material and of non-circular cross-section;

pressure means for exerting pressure to the exterior surface of the Bourdon tube means in the span of the enclosure means set forth below, and operative to cause a flattening or inward deflection of wall portions of the Bourdon tube means in said span;

enclosure means enclosing portions of the Bourdon tube means but permitting pressure from the pressure means to be operatively exerted exteriorly to the Bourdon tube means; and

control means by which actuation of the pressure means exerts pressure to the exterior surface of the Bourdon tube means to effect a flattening or inward deflection of the Bourdon tube walls and thus also effect a change of volume of the Bourdon tube interior which causes an increment of fluid to be displaced;

in a combination in which blocking means are provided which extend between the Bourdon tube means and the enclosure means and prevent pressure exerted by the pressure means to be exerted onto more than a selected portion or portions of the Bourdon tube means;

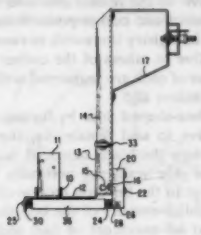
and in which the control means is operative, optionally at the will of the user, to exert pressure to the bourdon tube means at a selected one or plurality of portions thereof and thereby achieve a selected variation in the amount of fluid displaced, the variation of fluid volume displaced being dependent upon which one or more portions of the Bourdon tube means are caused to have pressure exerted thereupon by the pressure means.

4,484,699

TIRE CARRIER FOR PICKUPS AND VANS

Steven R. Heck, Luverne, Minn., assignor to Luverne Truck Equipment, Inc., Luverne, Minn.

Filed Aug. 9, 1983, Ser. No. 521,535
Int. Cl.³ B60R 3/00
U.S. Cl. 224—42.21 4 Claims



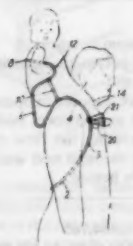
1. Means for carrying a spare tire for a vehicle comprising fixed frame means attached to said vehicle including attachment means adapted to be attached to said vehicle, extension means fixed to said attachment means and extending beyond the exterior of said vehicle, carrier means pivotally connected to said extension means and being thereby pivotable between an upright and a lower position, said carrier means including a carrier arm adapted to receive and hold said tire and having a bracket at the lower end of said carrier arm when said arm is in its upright position, bar means pivotally connected to said bracket, said fixed means having a closing end, said bar means extending toward and being slidably journalled in an opening in said end, compression spring biassing means surrounding said bar and engaged between said bracket and said closing end whereby said spring may be compressed between said end and said bracket.

4,484,700

DEVICE FOR USE IN CARRYING A CHILD

Sydney J. Bush, 37 Westella Rd., North Humberside, Kirkella Hull, England

Continuation of Ser. No. 286,191, Jul. 23, 1981, abandoned. This application Nov. 3, 1983, Ser. No. 549,005
Claims priority, application United Kingdom, Jul. 25, 1980, 8024451
Int. Cl.³ A45F 3/26
U.S. Cl. 224—161 9 Claims



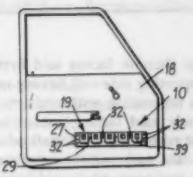
1. A device to be worn by an individual for use in supporting a child or infant to be carried seated on the shoulders of the wearer, comprising rigid bracing means extending about the rear waist portion of the torso of the wearer, a pair of spaced relatively rigid limbs integral with and extending upwardly and forwardly from said bracing means to pass below the upper portion of the arms and across the sides of the wearer, across the frontal shoulder region of the wearer's body, and then rearwardly and upwardly over the shoulders and down the back of the wearer's rear shoulder region whereby said rigid limb structure snugly embraces the shoulder, rigid integral portions of said limbs extending upwardly from the rear shoulder region, and rigid backrest means for the child integrally interconnecting the upper ends of said upwardly extending portions behind the wearer, whereby said limbs and upwardly extending portions comprise the sole rigid connection between said bracing means and said backrest and form a lever system having a fulcrum at the shoulder region of the wearer's body, and rearward forces placed upon the said backrest means by the child tend to exert a turning moment about said lever system which is resisted by the engagement of said bracing means against the rear waist portion of the torso.

4,484,701

CASSETTE TAPE RACK

Paul R. Frohn, 164 Reynolds Bridge Rd., Thomaston, Conn. 06787

Filed Nov. 25, 1983, Ser. No. 554,891
Int. Cl.³ B65D 85/672
U.S. Cl. 224—273 8 Claims



1. A cassette or 8-track tape cartridge storage rack having particular utility for being mountable on a door panel or dashboard of an automobile for forming a storage compartment, comprising:

rack means having a generally rectangular configuration including a backboard with a plurality of outwardly contoured wall portions for defining respective side and bottom walls about each of a plurality of respective spaced apart outwardly extending front walls, with window means and/or cut out slot means to permit reading of a lable on a cassette or cartridge, to form a plurality of discrete storage compartments each being open at a top and a back region, said backboard having substantially flat back surface portions for abuting with the door panel or dashboard of the automobile and having a first and a second end wall portions each with a plurality of mounting holes therein and having a plurality of intermediate wall portions each being interposed between respective proximate discrete storage compartments with each intermediate wall portion having a mounting hole therein; and

a plurality of fastening means each for being inserted into a respective mounting hole and for being fastened onto the door or dashboard of the automobile,

whereby said rack means being readily mountable to the door or dashboard of the automobile with the door or dashboard of the automobile forming a back wall member of each respective storage compartment being opened at a top portion thereof.

4,484,702

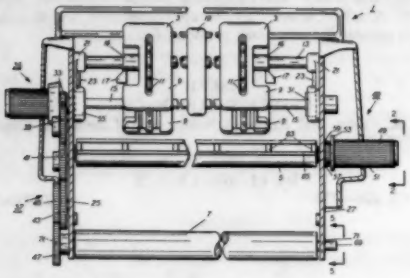
TRACTOR FEED ASSEMBLY TENSIONING BAR

Charles J. Sabonis, Plano, and Anthony W. Clark, Dallas, both of Tex., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 25, 1983, Ser. No. 478,950
Int. Cl.³ G03B 1/30
U.S. Cl. 226—74 3 Claims

1. A tension bar mechanism for tensioning and releasing a web between a pin feeding device and a printer platen which

comprises a tension bar mounted coaxially on a shaft for rotation therewith, said shaft being mounted at each end for axial rotation in first and second supporting sidewalls, an end of said shaft having a projecting portion projecting through said first supporting sidewall and having biasing means secured to said projecting portion; a knob positioned on said projecting portion of said shaft and containing an inner surface for contacting said biasing means such that said biasing means biases said knob toward said first supporting sidewall, said knob having at least



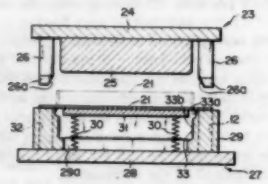
one locking means thereon facing said first supporting sidewall, said first supporting sidewall having on a surface facing said knob a means for mating with and retaining said locking means on said knob; said biasing means being of sufficient strength to prevent rotation of said shaft when said knob locking means is in contact with said retaining means and for rotating said shaft with said knob when said knob locking means is out of contact with said retaining means and said knob is rotated.

4,484,703

METHOD FOR MANUFACTURING A BOX-SHAPED DOOR

Isamu Kawasaki, and Takakazu Hamazaki, both of Oosaka, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 21, 1982, Ser. No. 420,840
Claims priority, application Japan, Nov. 13, 1981, 56-182605
Int. Cl.³ B23K *31/02*
U.S. Cl. 228—144 **2 Claims**



1. A method of manufacturing a box-shaped door comprising the steps of:

(a) selecting registerable male and female dies, said female die defining a central body cavity having interior walls defining an upper shaping section and a lower bending section, said bending section being outwardly stepped and above said shaping section when viewed in cross-section, said male die including a body forming portion and two pairs of corner posts each corner post including a pair of vertical surface oriented at right angles, inwardly beveled surface and said corner posts extending below said body forming portion;

(b) cutting a rectangular metal blank to form a substantial right angle notch in each corner, adjacent pairs of said notches thereby defining a line to establish a side wall;

(c) placing the blank having notches formed therein according to step (b) in juxtaposition with the female die so that each line establishing a side wall is substantially disposed above said bending section;

(d) centering the blank placed in juxtaposition with the female die in accordance with step (c) by advancing the male die relative to the female die, selected ones of the beveled surfaces of said corner posts contacting a portion of the notches in registry therewith to cause movement of the blank relative to others of the corner posts until the vertical surfaces of each are registered with the respective ones of said notches; and

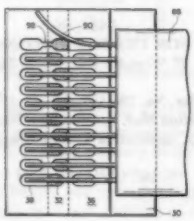
(e) forming said box-shaped door by further advancing said male die relative to said female die, the body forming portion contacting the blank centered according to step (d) so that said side walls are vertically bent along the establishing lines in the bending section of the female die to thereby establish corners of the box-shaped door and, upon continued advancement of said male die into said cavity, shaping the corners of said box-shaped door in said shaping section.

4,484,704

SOLDER DELIVERY SYSTEM

Willie K. Grassauer, Menlo Park, and William M. Robinson, Palo Alto, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 158,034, Jun. 9, 1980, Pat. No. 4,354,629. This application Dec. 8, 1981, Ser. No. 328,762
Claims priority, application United Kingdom, Jun. 8, 1981, 81117518
The portion of the term of this patent subsequent to Oct. 19, 1999, has been disclaimed.
Int. Cl.³ B23K *3/00*
U.S. Cl. 228—180 A **12 Claims**



1. A solder delivery system comprising:

(a) at least one layer of polymeric material having window means therethrough; and

(b) a solder strip with flux disposed in operative contact with said at least one layer and adjacent said window means;

said window means directing the flow of solder and flux from said solder strip through said window means when said delivery system is heated.

4,484,705

ADJUSTABLE AND PIVOTAL MAILBOX SUPPORT

Lloyd P. Sande, Box 46, West Star Rte., Two Harbors, Minn. 55616

Filed May 26, 1983, Ser. No. 498,409
Int. Cl.³ B65D *91/00*
U.S. Cl. 232—39 **3 Claims**

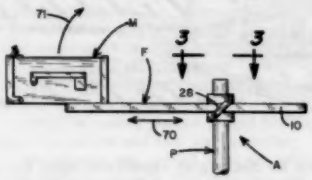
1. An adjustable pole-mounted mailbox support, comprising:

(a) an elongated support frame, including first and second spaced side members and a bridging member between said first and second spaced side members proximate a forward end of said support frame, and including a spacer member

between said first and second spaced side members proximate a rearward end of said support frame;

(b) a collar, having first and second spaced sidewalls connected to a front and rear wall;

(c) a bracket adjustably secured along a diagonal line on each of said first and second sidewalls, each of said brackets being at a lower position proximate said front wall and at a higher position proximate said rear wall, said first and second spaced side members respectively fitted between a



bracket and one of said sidewalls, said support frame contacting said brackets at a forward lower position and at a rearward higher position along said first and second spaced side members;

(d) means for adjustably positioning said collar on a pole to place said frame at various positions on a pole, including a bolt carried by said rear wall for pressure engagement with said pole; and

(e) means for securing a mailbox on said bridging member of said support frame.

4,484,706

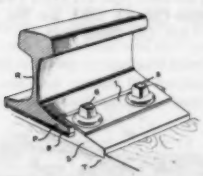
RESILIENT RAIL FASTENER

Michel Duchemin, Douai, France, assignor to Ressorts Industrie, Paris, France

Filed Jun. 6, 1983, Ser. No. 502,620

Int. Cl.³ E01B 9/46

U.S. Cl. 238—349 **4 Claims**



1. A resilient fastener for fastening a rail on its support, constituted by a flexible blade comprising a longitudinal edge parallel to the axis of the rail and applied against the rail flange, and resting on the rail support, wherein said blade comprises two orifices situated at equal distance from the said longitudinal edge and arranged so that when the said fastener is fitted, the orifices are situated above the rail support and close to the edge of the rail, the said longitudinal edge being curved to assume a convex shape providing a convex face and a concave face, and its convex face facing the rail flange when in fastening position, the flexible blade being of constant thickness, and the said convex shape of said blade presents, when not fitted on the rail, a substantially cylindrical surface of which the directrix is a curve inscribed between the warped shape which the blade would adopt if loaded in its center, and the arc of circle of radius ρ_0 passing through said center and the centers of said orifices.

4,484,707

SPRAY TIP

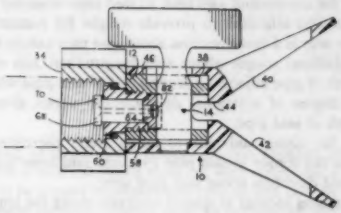
Oliver J. Calder, Orange, Calif., assignor to Phyllis Graham, Orange, Calif.

Continuation-in-part of Ser. No. 442,525, Nov. 18, 1982, , which is a continuation of Ser. No. 165,247, Jul. 2, 1980, abandoned.

This application Jan. 14, 1983, Ser. No. 457,919

Int. Cl.³ B05B 15/02

U.S. Cl. 239—119 **9 Claims**



1. A spray tip comprising:

a housing having a longitudinal chamber and an intersecting orthogonal cylindrical bore;

a cylindrical turret member rotatably seated in said intersecting cylindrical bore and having a transverse bore in alignment with said longitudinal chamber;

a spray tip orifice member mounted in said transverse bore;

a turret member seal support received in said longitudinal chamber and having a central through passage and a cylindrical concave seal support surface facing said turret member

a plastic tee seal having an end flange on a cylindrical shank extending into abutting engagement with the rear face of said seal support and having a boss received within the central through passageway of said seal support in a friction fit, forming a seal assembly retaining said seal support axially on said tee seal in said housing during removal of said turret member; and cooperating index means on said seal assembly and said housing restraining said seal assembly against rotation in said longitudinal chamber.

4,484,708

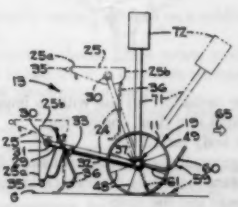
TORQUE DRIVEN IRRIGATION SYSTEM

James M. Hait, 8047 Chardonay Ct., San Jose, Calif. 95135

Filed May 3, 1982, Ser. No. 374,566

Int. Cl.³ B05B 3/00

U.S. Cl. 239—177 R **11 Claims**



1. A self-propelled rotary irrigation system for connection at one end to a source of water located at the center of an area to be irrigated, said system comprising:

a length of pipe for carrying water, said pipe having a longitudinal axis;

a plurality of irrigation outlets arranged in spaced relationship along said length of pipe for discharging water therefrom;

means for mounting said pipe with said longitudinal axis of said pipe in a generally horizontal plane;

means for connecting a first end of said pipe to said water source in a manner such that the length of pipe is free to travel about said source and such that said first end is unable to rotate about said longitudinal axis of said pipe;

a lever arm having a first end thereof connected to said pipe at right angles to said pipe axis;

a valveless tank pivotally connected to a second end of said lever arm;

means for connecting said tank to said pipe whereby water flows into said tank to provide weight for rotating said lever arm in a first direction about said pipe axis to induce a rotational torque about said longitudinal axis of said length of pipe adjacent a second end of said pipe whereby the degree of rotational displacement varies along the length of said pipe;

means for tilting said tank to dump water therefrom and allow the torque in said pipe to rotate said lever arm in a second direction about said pipe axis;

wheel means located at spaced intervals along the length of said pipe for supporting and advancing the pipe, said wheel means being responsive to the torque induced in the pipe to advance the pipe about the water source; and

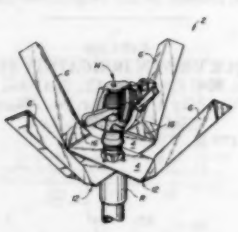
means for using said induced torque to advance said wheel means in substantially equal incremental distances about said water source.

4,484,709

SPRINKLER DEFLECTOR

William C. Hosie, Linden, Calif., assignor to William C. Hosie, Inc., Linden, Calif.

Filed Jan. 15, 1982, Ser. No. 339,366
Int. Cl.³ B05B *1/26*
U.S. Cl. 239—231 **7 Claims**



1. A sprinkler deflector, for use with an impact-type sprinkler head mounted to a riser, comprising:

a deformable body including:

an elongate, generally horizontal flat base defining a central opening means for fixedly mounting said base between the sprinkler head and the riser;

a deformable deflector arm extending upwardly and outwardly at a deflector arm angle from said base, said deflector arm having upwardly and outwardly angled, generally V-shaped deflection surfaces; and

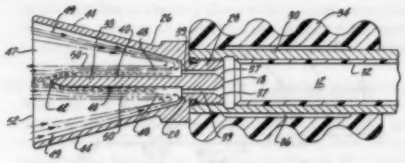
transition means between said base and said deflector arm for allowing the angle of said deflector arm to be varied to vary the size of the unwatered area.

4,484,710

FIRE SUPPRESSANT NOZZLE

Edward J. Rozniecki, Macomb, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 11, 1983, Ser. No. 474,398
Int. Cl.³ B05B *1/28*
U.S. Cl. 239—290 **20 Claims**



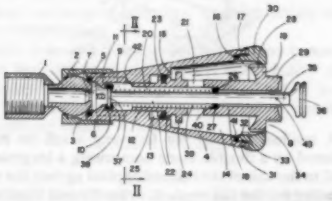
1. A nozzle for discharging vaporizable liquid fire suppressant onto a fireball located a substantial distance from the nozzle; said nozzle comprising liquid chamber means adapted to receive liquid suppressant from a pressurized liquid source, said chamber means including a pressure-containment wall having a primary orifice therethrough for discharging a concentrated liquid suppressant stream, a liquid-attachment wall extending from the pressure-containment wall in the downstream direction, said liquid-attachment wall defining a liquid attachment surface that begins at a point near an edge of the orifice exit opening, a shroud wall extending from the pressure-containment wall in spaced relation to the liquid attachment surface, said liquid-attachment surface being closer to the orifice than the shroud wall so that the liquid stream attaches to the liquid-attachment surface rather than the shroud wall, and means for admitting an insulating fluid to the space between the shroud wall and the liquid stream prior to the time that the liquid stream leaves the liquid-attachment surface, whereby the leaving liquid stream is at least partially surrounded by an insulating fluid entrained onto the liquid stream.

4,484,711

SHOWER HEAD ADAPTED TO STOP AND TO ALLOW THE FLOW OF MIXED WATER

Spiridon Constantinescu, and Serban Constantinescu, both of 30 Golders Green Ave., Scarborough, Ontario, Canada M1C 3P6

Division of Ser. No. 257,545, Apr. 27, 1981, Pat. No. 4,427,177. This application Oct. 11, 1983, Ser. No. 540,891
Int. Cl.³ B05B *1/18*
U.S. Cl. 239—460 **1 Claim**



1. In a shower head including means for connecting, for rotating, and for sealing said shower head into a shower arm, which shower arm receives a flow of mixed water from a mixer; a housing having a flow opening therethrough consisting of an inlet, a main chamber and an outlet, said housing having also a first thread means at the inner end matching with said connecting means, a second thread means inside, and a third thread means at the outer end; a shank having a fourth thread means at the inner end matching with said second

thread means and a cap at the outer end, and said shank having also perimetrical grooves disposed around said cap for adjusting the jet of flow of mixed water and having also a ribbed cylinder at the outer end for shifting said shank and said grooves; a housing plug for locking said shank inside said housing and having a fifth thread means matching with said third thread means, and having also sealing means between said housing plug and said housing; the improvement comprising, in combination, an interior controller for stopping or opening the flow of mixed water, wherein, as part of said controller:

(a) said housing includes
  (1) a few by-passes, at least three, for diverting the flow of mixed water and being disposed peripherically between said inlet and said main chamber;
  (2) hooked ribs disposed between said by-passes and shaping into an axial circular stop;
  (3) a cylindrical sealing portion placed between said second thread means and said main chamber;
  (4) a first annular seat placed between said cylindrical sealing portion and said main chamber; and
  (5) a valve chamber placed between said hooked ribs and said cylindrical sealing portion;
(b) said shank including
  (1) an axial cylindrical opening;
  (2) a few slots placed between said axial cylindrical opening and said main chamber;
  (3) an exterior annular groove and an elastomeric seal ring inside said exterior annular groove, for sealing the space between said improved shank and said improved housing on said cylindrical sealing portion;
  (4) a stopper placed between said exterior annular groove and said slots, for stopping the screwing of said shank onto said first annular seat;
  (5) a second annular seat at the inner end of said improved shank; and
  (6) a third annular seat placed inside said axial cylindrical opening between said slots and said cap;
(c) a spindle mounted inside said axial cylindrical opening, said spindle having
  (1) a valve at the inner end of said spindle, said valve moving between said axial circular stop and said second annular seat;
  (2) a knob mounted at the outer end of said spindle by means of a pin; and
  (3) a U seal ring mounted around said valve;
(d) sealing means having a second elastomeric seal ring and a washer placed around said spindle and pressing permanently onto said third annular seat and around said spindle, said sealing means sealing the remaining space between said improved shank and said spindle;
(e) a compressible spring around said spindle placed between said valve and said washer for keeping said valve open when the flow of mixed water has been turned off by said mixer.

4,484,712

APPARATUS FOR ORTHOCYCLICALLY WINDING COILS

Wilhelmus H. A. Leenders, Bemmel, Netherlands, assignor to Stichting Research en Techniek van de Katholiek Universiteit, Toernooiveld, Netherlands

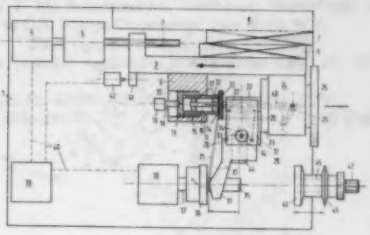
Filed Feb. 8, 1982, Ser. No. 347,047

Claims priority, application Netherlands, Feb. 16, 1981, 8100746

Int. Cl.³ B65H *54/00*

U.S. Cl. 242—25 R **4 Claims**

1. Apparatus for orthocyclically winding coils, comprising; support means adapted to have a core to be wound rotatably mounted thereon, a wire supply mechanism in space relationship with respect to said support means, said wire supply mechanism including a wire guide and means for moving said wire guide incrementally in the longitudinal direction relative to said support means, means for revolving a core about its axis while held by said support means, a wire depositing member connected with the wire supply mechanism and extending from said wire supply mechanism in the direction of said support means, said wire depositing member having an end in proximity of and above the support means, said wire supply mechanism, said support means, and the wire depositing member being arranged with respect to one another so that in operation a wire extending from the wire supply mechanism to a core to be wound is pressed and held on said core by said end at an angle differing slightly from an orthogonal feed-in position and with a certain tension, and said wire depositing member being also coupled with the means for moving said wire guide incrementally longitudinally of the support means.



4,484,713

THREAD REELING APPARATUS

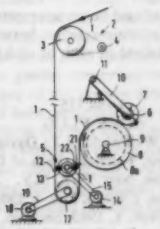
Alfred Tschentscher, Cologne, Fed. Rep. of Germany, assignor to FMN Schuster GmbH & Co., K.G., Fed. Rep. of Germany

Continuation-in-part of Ser. No. 254,565, Apr. 15, 1981, Pat. No. 4,379,528. This application Apr. 1, 1983, Ser. No. 481,229

The portion of the term of this patent subsequent to Apr. 12, 2000, has been disclaimed.

Int. Cl.³ B65H *54/28*

U.S. Cl. 242—43 R **3 Claims**



1. An apparatus for reeling a thread on a bobbin, said apparatus comprising:
(a) a first traversing thread guide means mounted to guide the thread to-and-fro in a direction perpendicular to the direction of movement of the thread,
(b) tension controlling means located between the first traversing thread guide means and the bobbin to control the tension of the thread, and
(c) a driven roller for feeding the thread to the bobbin,
(d) said tension controlling means including a smooth roller located downstream from said first traversing thread guide assembly for receiving a thread on its smooth peripheral surface and a second traversing thread guide means located between the smooth roller and the driven roller,
(e) said second traversing thread guide means being effective to guide the thread between the smooth roller and the driven roller.

a plurality of irrigation outlets arranged in spaced relationship along said length of pipe for discharging water therefrom;

means for mounting said pipe with said longitudinal axis of said pipe in a generally horizontal plane;

means for connecting a first end of said pipe to said water source in a manner such that the length of pipe is free to travel about said source and such that said first end is unable to rotate about said longitudinal axis of said pipe;

a lever arm having a first end thereof connected to said pipe at right angles to said pipe axis;

a valveless tank pivotally connected to a second end of said lever arm;

means for connecting said tank to said pipe whereby water flows into said tank to provide weight for rotating said lever arm in a first direction about said pipe axis to induce a rotational torque about said longitudinal axis of said length of pipe adjacent a second end of said pipe whereby the degree of rotational displacement varies along the length of said pipe;

means for tilting said tank to dump water therefrom and allow the torque in said pipe to rotate said lever arm in a second direction about said pipe axis;

wheel means located at spaced intervals along the length of said pipe for supporting and advancing the pipe, said wheel means being responsive to the torque induced in the pipe to advance the pipe about the water source; and

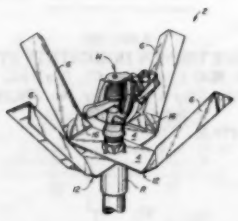
means for using said induced torque to advance said wheel means in substantially equal incremental distances about said water source.

4,484,709

SPRINKLER DEFLECTOR

William C. Hosie, Linden, Calif., assignor to William C. Hosie, Inc., Linden, Calif.

Filed Jan. 15, 1982, Ser. No. 339,366
Int. Cl.³ B05B 1/26
U.S. Cl. 239—231 **7 Claims**



1. A sprinkler deflector, for use with an impact-type sprinkler head mounted to a riser, comprising:

a deformable body including:

an elongate, generally horizontal flat base defining a central opening means for fixedly mounting said base between the sprinkler head and the riser;

a deformable deflector arm extending upwardly and outwardly at a deflector arm angle from said base, said deflector arm having upwardly and outwardly angled, generally V-shaped deflection surfaces; and

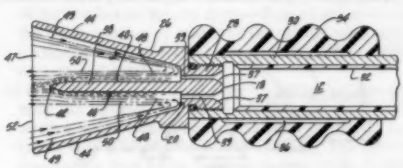
transition means between said base and said deflector arm for allowing the angle of said deflector arm to be varied to vary the size of the unwatered area.

4,484,710

FIRE SUPPRESSANT NOZZLE

Edward J. Rozniecki, Macomb, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 11, 1983, Ser. No. 474,398
Int. Cl.³ B05B 1/28
U.S. Cl. 239—290 **20 Claims**



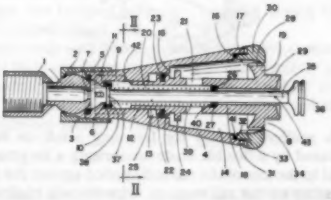
1. A nozzle for discharging vaporizable liquid fire suppressant onto a fireball located a substantial distance from the nozzle; said nozzle comprising liquid chamber means adapted to receive liquid suppressant from a pressurized liquid source, said chamber means including a pressure-containment wall having a primary orifice therethrough for discharging a concentrated liquid suppressant stream, a liquid-attachment wall extending from the pressure-containment wall in the downstream direction, said liquid-attachment wall defining a liquid attachment surface that begins at a point near an edge of the orifice exit opening, a shroud wall extending from the pressure-containment wall in spaced relation to the liquid attachment surface, said liquid-attachment surface being closer to the orifice than the shroud wall so that the liquid stream attaches to the liquid-attachment surface rather than the shroud wall, and means for admitting an insulating fluid to the space between the shroud wall and the liquid stream prior to the time that the liquid stream leaves the liquid-attachment surface, whereby the leaving liquid stream is at least partially surrounded by an insulating fluid entrained onto the liquid stream.

4,484,711

SHOWER HEAD ADAPTED TO STOP AND TO ALLOW THE FLOW OF MIXED WATER

Spiridon Constantinescu, and Serban Constantinescu, both of 30 Golders Green Ave., Scarborough, Ontario, Canada M1C 3P6

Division of Ser. No. 257,545, Apr. 27, 1981, Pat. No. 4,427,177. This application Oct. 11, 1983, Ser. No. 540,891
Int. Cl.³ B05B 1/18
U.S. Cl. 239—460 **1 Claim**



1. In a shower head including means for connecting, for rotating, and for sealing said shower head into a shower arm, which shower arm receives a flow of mixed water from a mixer; a housing having a flow opening therethrough consisting of an inlet, a main chamber and an outlet, said housing having also a first thread means at the inner end matching with said connecting means, a second thread means inside, and a third thread means at the outer end; a shank having a fourth thread means at the inner end matching with said second

thread means and a cap at the outer end, and said shank having also perimetrical grooves disposed around said cap for adjusting the jet of flow of mixed water and having also a ribbed cylinder at the outer end for shifting said shank and said grooves; a housing plug for locking said shank inside said housing and having a fifth thread means matching with said third thread means, and having also sealing means between said housing plug and said housing; the improvement comprising, in combination, an interior controller for stopping or opening the flow of mixed water, wherein, as part of said controller:

(a) said housing includes
  (1) a few by-passes, at least three, for diverting the flow of mixed water and being disposed peripherically between said inlet and said main chamber;
  (2) hooked ribs disposed between said by-passes and shaping into an axial circular stop;
  (3) a cylindrical sealing portion placed between said second thread means and said main chamber;
  (4) a first annular seat placed between said cylindrical sealing portion and said main chamber; and
  (5) a valve chamber placed between said hooked ribs and said cylindrical sealing portion;
(b) said shank including
  (1) an axial cylindrical opening;
  (2) a few slots placed between said axial cylindrical opening and said main chamber;
  (3) an exterior annular groove and an elastomeric seal ring inside said exterior annular groove, for sealing the space between said improved shank and said improved housing on said cylindrical sealing portion;
  (4) a stopper placed between said exterior annular groove and said slots, for stopping the screwing of said shank onto said first annular seat;
  (5) a second annular seat at the inner end of said improved shank; and
  (6) a third annular seat placed inside said axial cylindrical opening between said slots and said cap;
(c) a spindle mounted inside said axial cylindrical opening, said spindle having
  (1) a valve at the inner end of said spindle, said valve moving between said axial circular stop and said second annular seat;
  (2) a knob mounted at the outer end of said spindle by means of a pin; and
  (3) a U seal ring mounted around said valve;
(d) sealing means having a second elastomeric seal ring and a washer placed around said spindle and pressing permanently onto said third annular seat and around said spindle, said sealing means sealing the remaining space between said improved shank and said spindle;
(e) a compressible spring around said spindle placed between said valve and said washer for keeping said valve open when the flow of mixed water has been turned off by said mixer.

4,484,712

APPARATUS FOR ORTHOCYCLICALLY WINDING COILS

Wilhelmus H. A. Leenders, Bemmel, Netherlands, assignor to Stichting Research en Techniek van de Katholiek Universiteit, Toernooiveld, Netherlands

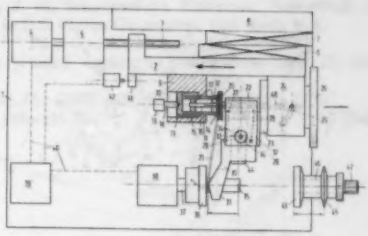
Filed Feb. 8, 1982, Ser. No. 347,047

Claims priority, application Netherlands, Feb. 16, 1981, 8100746

Int. Cl.³ B65H *54/00*

U.S. Cl. 242—25 R **4 Claims**

1. Apparatus for orthocyclically winding coils, comprising; support means adapted to have a core to be wound rotatably mounted thereon, a wire supply mechanism in space relationship with respect to said support means, said wire supply mechanism including a wire guide and means for moving said wire guide incrementally in the longitudinal direction relative to said support means, means for revolving a core about its axis while held by said support means, a wire depositing member connected with the wire supply mechanism and extending from said wire supply mechanism in the direction of said support means, said wire depositing member having an end in proximity of and above the support means, said wire supply mechanism, said support means, and the wire depositing member being arranged with respect to one another so that in operation a wire extending from the wire supply mechanism to a core to be wound is pressed and held on said core by said end at an angle differing slightly from an orthogonal feed-in position and with a certain tension, and said wire depositing member being also coupled with the means for moving said wire guide incrementally longitudinally of the support means.



4,484,713

THREAD REELING APPARATUS

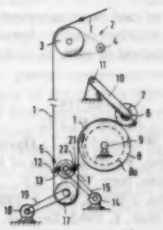
Alfred Tschentscher, Cologne, Fed. Rep. of Germany, assignor to FMN Schuster GmbH & Co., K.G., Fed. Rep. of Germany

Continuation-in-part of Ser. No. 254,565, Apr. 15, 1981, Pat. No. 4,379,528. This application Apr. 1, 1983, Ser. No. 481,229

The portion of the term of this patent subsequent to Apr. 12, 2000, has been disclaimed.

Int. Cl.³ B65H *54/28*

U.S. Cl. 242—43 R **3 Claims**



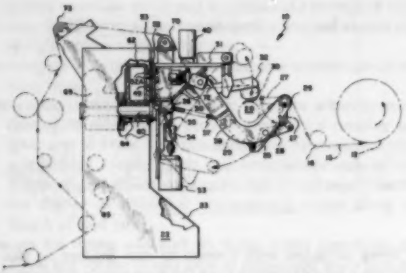
1. An apparatus for reeling a thread on a bobbin, said apparatus comprising:
(a) a first traversing thread guide means mounted to guide the thread to-and-fro in a direction perpendicular to the direction of movement of the thread,
(b) tension controlling means located between the first traversing thread guide means and the bobbin to control the tension of the thread, and
(c) a driven roller for feeding the thread to the bobbin,
(d) said tension controlling means including a smooth roller located downstream from said first traversing thread guide assembly for receiving a thread on its smooth peripheral surface and a second traversing thread guide means located between the smooth roller and the driven roller,
(e) said second traversing thread guide means being effective to guide the thread between the smooth roller and the driven roller.

4,484,714

BEAM MOUNTED CORE ENVELOPER

Brian S. W. Puzey, Kennesaw, Ga., assignor to The Black Clawson Company, Middletown, Ohio

Filed Jul. 22, 1983, Ser. No. 516,226
Int. Cl.³ B65H *19/26, 19/28*
U.S. Cl. 242—56 A 3 Claims



1. A core enveloper adapted for applying a web to a new core on a winder, providing for either clockwise or counterclockwise wrap of the web on the core, comprising:

a rider roll engageable with a web on said core,

a pair of enveloper arms carrying therebetween an enveloper roll movable by said arms to deflect a web over said core and cause said web partially to wrap said core in one direction of rotation,

knife means mounted on said arm for severing said web including deflector means for causing the leading end of the web to engage said core,

a support frame,

a beam rotatably mounted on said support frame,

said arms at said rider roll being pivotally mounted on said beam for rotation therewith between an upper position in which said enveloper roll causes said web to wrap said core in one direction and a lower position in which said enveloper roll causes said web to wrap said core in the opposite direction,

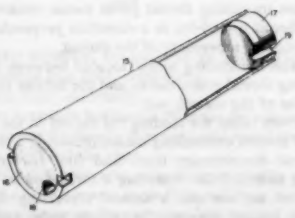
the axis of rotation of said beam intersecting the axis of said core so that the relative relation between said rolls and said core is maintained in each of said beam positions.

4,484,715

CORE PLUG

Richard E. DeMarco, Waldwick, N.J.; David Hopkins, Wilton, and Dennis I. Deegan, Fairfield, both of Conn., assignors to Westvaco Corporation, New York, N.Y.

Continuation of Ser. No. 270,413, Jun. 4, 1981, abandoned. This application Nov. 1, 1983, Ser. No. 547,458
Int. Cl.³ B65D *85/67*
U.S. Cl. 242—68.6 4 Claims



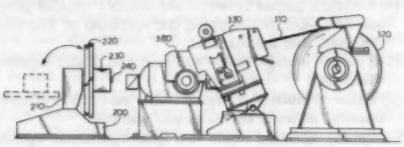
1. An improved core end plug for reinforcing and preventing damage to the ends of hollow, tubular cores on which webs of paper, plastic, fabric and other material is wound, said core plug comprising a solid, elongated cylindrical body formed from wood, plastic or a composite woody material having sufficient strength to absorb impact shocks and crushing loads experienced by the core ends during handling and shipping, said core plug having an outer face of slightly greater diameter than the inner face that is inserted into the ends of the cores after the material is wound thereon and before shipment, said core plug including a means for removing it from the cores after shipment, said means comprising a core plug removal opening in the form of an elongated groove completely located in the outer peripheral surface of the core plug and extending throughout the full length of the core plug for providing increased strength to absorb impact shocks and crushing loads experience during handling and shipping, said groove occupying an area at the outer face of the core plug of at least about 0.2 square inch and no greater than about 20% of the total area of the outer face of the core plug so as to accomodate a core plug removal tool thus permitting the core plug to be removed from the cores after shipment.

4,484,716

DEVICE FOR SEPARATING A COIL OF SHEET METAL FROM A CONSTRUCT

Peter J. Korcusko, Colonia, and Fred R. Bohl, Chatham, both of N.J., assignors to Ruesch Machine Company, Inc., Springfield, N.J.

Filed Aug. 23, 1982, Ser. No. 410,460
Int. Cl.³ B21C *47/24;* B65H *35/02*
U.S. Cl. 242—79 12 Claims



1. A device for separating coils from a construct of a plurality of wound coils axially connected by weakened areas therebetween the device comprising:

a support means having a cantilevered arm on which the construct is disposed and having a free end;

a separating means mounted on said arm at the free end; and

a holding means which is associated with the free end for holding a coil of the construct while said coil is axially separated, and for moving the separated coil away from said support means.

4,484,717

STRETCH-WRAP FILM DISPENSER WITH SINGLE DIGIT TENSION CONTROL

Joseph Goldstein, 1325 Southwind Cir., Westlake Village, Calif. 91361

Filed Dec. 13, 1982, Ser. No. 449,444
Int. Cl.³ B65H *75/40*
U.S. Cl. 242—96 12 Claims

1. A stretch-wrap film dispenser comprising:

a central spindle for rotating with a roll of stretch-wrap film;

a substantially rigid tubular handle mounted on the exterior of said spindle and spaced therefrom so that said tubular handle is freely rotable on said spindle, said substantially rigid tubular handle being sufficiently rigid that normal manual grasp of said handle does not cause binding of said handle on said spindle; and

an annular brake ring of resilient material engaged around and spaced from said spindle in its undeflected position and positioned on said spindle axially adjacent said handle, said handle and said brake ring being so dimensioned and said brake ring being formed of sufficiently flexible material that one finger of the user's hand can engage around

said brake ring to deflect it into braking engagement with said spindle while some of the user's other fingers engage around said handle adjacent said brake ring so that the

user can support and guide a roll of stretch-wrap film and by grasping compression on said brake ring can control unwinding tension.

4,484,718

HAND HELD REEL

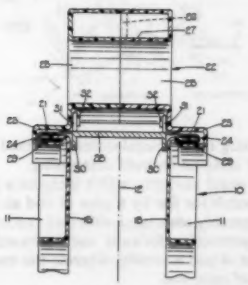
Edward J. Jones-Fenleigh, Oadby, England, assignor to Invicta Plastics Limited, Oadby, England

Filed Jan. 4, 1983, Ser. No. 455,478

Claims priority, application United Kingdom, Jan. 12, 1982, 8200794

Int. Cl.³ B65H *75/40, 75/36*

U.S. Cl. 242—96 **14 Claims**



1. A reel for storing an elongate flexible element, said reel comprising a reel body having a main axis and including circular side parts having peripheral portions, track means on each of said peripheral portions in fixed spaced relation, a carrying handle in free sliding engagement with said reel by means of said track means whereby said reel is freely rotatable relative to said handle, and means for normally maintaining said side parts in a predetermined spaced relationship such that the element can be wound tangentially on and off said reel between said side parts without frictional engagement between said side parts and said track means and such that friction between said reel and said handle when they are relatively rotated is minimized said track means including peripheral flanges on said side parts extending away from each other in opposite direction from said side parts and said carrying handle having grooves in which said peripheral flanges are respectively, slidingly received.

4,484,719

MAGNETIC-TAPE CASSETTE WITH ANTI-TELESCOPING GUIDES AND REELS

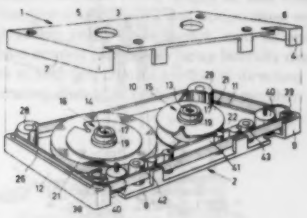
Johannes J. M. Schoenmakers, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 25, 1982, Ser. No. 436,532

Claims priority, application Netherlands, Oct. 28, 1981, 8104863

Int. Cl.³ G03B *1/04*; G11B *15/32*; B65H *27/00*

U.S. Cl. 242—199 **18 Claims**



1. A magnetic-tape cassette comprising a housing having two rectangular major walls, two long side walls and two short walls defining corners of the housing, two reel hubs mounted for rotation in the major walls, a pair of tape guides arranged at or near said corners of the cassette housing, and a length of magnetic-tape wound on and extending between said hubs, a first one of said long side walls being formed with apertures, said magnetic-tape being passed over said guides in contact therewith so as to guide said tape past said apertures, characterized in that

the reel hubs are mounted to fit substantially without play in the major walls,

each of the reel hubs comprises a pair of opposed flanges near respective ends of the hub, the flanges each having a diameter such that, starting from the circumference of the reel hub, the flanges support at least some of the turns of tape on the hub in an axial direction,

each of the tape guides comprises two height guides for supporting edges of the tape in directions parallel to the axis of the reel hubs; near that side of the respective tape guides which faces the first long side wall, the two height guides of each respective tape guide converge from the direction of said first long side wall as the tape is passed over said guides, the height guides guiding tape edges at least at an area of contact between the tape and the respective guide, and

at least when the cassette is placed on a magnetic-tape cassette apparatus, a plane tangent to that end portion of a height guide of a tape guide which is disposed near a given reel hub substantially coincides with a plane tangent to the inner side of a respective one of the flanges of the given tape guide.

4,484,720

DRAG MECHANISMS OF FISHING SPINNING REELS

Kikuo Tunoda, Hiroshima, Japan, assignor to Ryobi Limited, Fuchu, Japan

Filed Mar. 29, 1982, Ser. No. 363,005

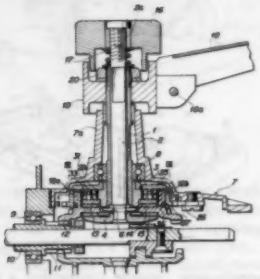
Claims priority, application Japan, Apr. 6, 1981, 56-49870[U]

Int. Cl.³ A01K *89/00*

U.S. Cl. 242—218 **4 Claims**

1. In a fishing spinning reel having a main body, a hollow handle shaft, a drag shaft concentrically extending through said hollow handle shaft, a master gear for rotating a rotor, said master gear having a hub and being mounted on an inner end

of said handle shaft, a supporting plate supporting the inner end of said handle shaft, drag mechanism including drag washers clamping said master gear therebetween, a drag knob threaded onto an outer end of said drag shaft, and a spring interposed between said knob and an outer end of said drag shaft thereby permitting said rotor to slip rotate, and means for preventing reverse rotation of the handle shaft comprising a ratchet wheel mounted on the handle shaft and a pawl pivotally mounted on the body cooperating with the ratchet wheel, said ratchet wheel being in the form of a shallow cup having a sidewall telescoped over said hub of said master gear, the improvement which comprises: releasable driving means interposed between the handle shaft and the master gear, a pawl



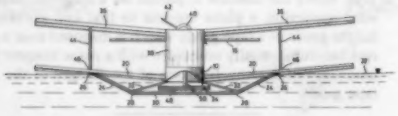
operating cam provided with radial cam operating members and secured to the inner end of said handle shaft so that the pawl operating cam can rotate a predetermined angle relative to said ratchet wheel, a plurality of pawl pivotally mounted on a plate secured to said ratchet wheel so that said pawls are operated by said cam operating members, said hub of said master gear being provided with ratchet teeth disposed on the radially inner wall which drivingly engage said pawls when said handle is rotated in a forward direction, said pawls being disengaged from the ratchet teeth on the master gear when said handle is rotated in a reverse direction, said drag mechanism remaining operative when said pawls are disengaged from the ratchet teeth on the master gear.

4,484,721

WATERPLANES EMPLOYING A HYDROFOIL STRUCTURE AS LANDING GEAR

Frank S. Gue, 2252 Joyce St., Burlington, Ontario, Canada L7R 2B5

Filed Jan. 12, 1983, Ser. No. 457,336
Int. Cl.³ B64C *25/00, 35/00*
U.S. Cl. 244—105 **6 Claims**



1. A waterplane with sustaining wings for air flight comprising:

a waterplane body;

at least one pair of air flight wings mounted on the body so that when the waterplane is at rest in water their roots are at least partly immersed, the said wings being at dihedral angle such that they are both wholly out of the water at a point from 25% to 90% of one semi-span from the respective root;

a hydrofoil truss structure mounted on the body to extend below the body a vertical distance such that no other part of the waterplane can strike the water upon landing when the waterplane is at the landing angle of attack;

said hydrofoil truss structure being constituted by two transversely spaced primary hydrofoils terminating at respective outboard ends by respective intersections with the wings, their inboard ends being lower than their outboard ends, and being spaced from one another by a distance at least as great as the width of the waterplane body, the said two primary hydrofoils being connected to one another by a horizontal, secondary surface-skimming hydrofoil,

and two truss structure strut members each connected at one end to the waterplane body and at the other end at least adjacent to a respective junction of a primary hydrofoil inboard end with the said secondary hydrofoil,

said primary and secondary hydrofoils having an area of from 1 to 10% of the said air flight wings, being disposed at a forward-opening angle to the water line at rest from $-3°$ to $+10°$, and having an angle of incidence greater by from 1° to 10° than the angle of incidence of said air flight wings, and

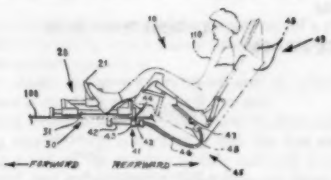
said hydrofoil truss structure forming with the portions of the wings between the said intersections therewith of the primary hydrofoils a waterplane truss structure that is located longitudinally with respect to the waterplane length from about 20% of wing chord forward to about 20% of wing chord aft of the centre of gravity.

4,484,722

TRANSLATING RUDDER PEDAL SYSTEM

George W. Larson, Fort Worth; William E. Lee, Tarrant County, and Edward N. Lewis, Jr., Fort Worth, all of Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 30, 1982, Ser. No. 393,834
Int. Cl.³ B64C *13/06*
U.S. Cl. 244—235 **1 Claim**



1. A translating rudder pedal system mounted in, and operably associated with, an aircraft, comprising:

a. a rudder pedal assembly which includes a pair of rudder control pedals for use by a pilot of said aircraft;

b. means, operably associated with said rudder pedal assembly, for permitting forward and rearward translational movement of said assembly, wherein this means includes a plurality of rails; and

c. means, operably connected to said rudder pedal assembly, for imparting forward and rearward translational motion to said assembly, whereby said assembly is driven forwardly and rearwardly on said plurality of rails by this means, and wherein this means includes:

(1) means, operably connected to said rudder pedal assembly, for converting imparted rotary motion to linear motion, wherein this means includes:

a rotatable jackscrew member to which motion is imparted and which rotates in response to said imparted motion;

a nut member threadedly connected to said jackscrew member, and through which rotates said jackscrew member;

whereby the rotary motion of said jackscrew member is converted by said nut member into linear motion, resulting in linear movement of said nut member,

forwardly and rearwardly, in response to the direction of rotational motion of said jackscrew member;

(2) a translational motion imparting source which is operably connected to said means for converting imparted rotary motion to linear motion, and which includes a reclinable, translationally movable, pilot's seat;

(3) actuation means operably interconnecting said means for converting imparted rotary motion to linear motion and said translational motion imparting source, wherein said actuation means includes a flexible shaft member and an actuator member, with said shaft member operably connected at one end to said rotatable jackscrew member and operably connected at another end to said actuator member, and with said actuator member attached to said translational motion imparting source; and

(4) a movable bracket member attached to, and interconnecting, said nut member and said rudder pedal assembly, whereby motion imparted to said nut member by said rotating jackscrew member is transmitted by said linearly moving nut member to said movable bracket member, thereby causing said bracket member, and said rudder pedal assembly attached thereto, to move linearly in the same direction as said moving nut member;

whereby when translational motion is imparted to said rudder pedal assembly, said assembly translationally moves in response thereto; and

whereby when said pilot of said aircraft is seated in said seat, said pilot is able to maintain constant feet contact with said pair of rudder control pedals when said seat is still or is translationally moved forwardly or rearwardly, and when said seat is upright, is reclined, or is in transit from, or to, an upright or a reclined position.

4,484,723

AIR-SPRUNG SEAT

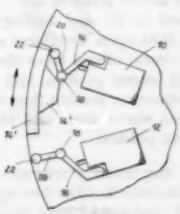
Hermann Meiller, Amberg, and Johann Grassl, Schwandorf, both of Fed. Rep. of Germany, assignors to Willibald Grammer, Amberg, Fed. Rep. of Germany

Filed Feb. 1, 1982, Ser. No. 344,627

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1981, 3136756

Int. Cl.³ A47C *3/30*

U.S. Cl. 248—550 **5 Claims**



1. An air-sprung vehicle seat including a seat frame for carrying a seat cushion and supported on a base frame by way of an air spring, and a means for adjustment in respect of weight, comprising a control cam means and two spaced-apart switch means, one of said switch means supplying air into said gas spring and said other switch means discharging air from said gas spring, said two switch means being movable relative to said control cam means in dependence on the height of said seat frame from said base frame and being actuated by said control cam means, each of said switch means having two actuating stages such that upon increasing actuation thereof a first actuating stage acts as an idle stage and said respective switch means is switched on only in a subsequent second stage, while with decreasing actuation of said switch means, said switch means which is switched on remains switched on until occurrence of both actuating stages, each of said switch means being a rocker roller lever switch comprising a rocker lever resiliently urged into an upright position against an abutment and pivotally connected to a main actuating member transversely displaceable with respect to direction of relative movement between said control cam means and said switches, and wherein said control cam means has two control portions such that in both directions of movement a first control portion which displaces said respective switch means being actuated into said first actuating stage thereof is initially operative and a second control portion which moves said respective actuated switch means into said second actuating stage is only operative upon further movement of said control cam means in the same direction, said first control portion of said control cam means being extendable over an entire length of said control cam means in direction of movement and cooperating with a free end of said rocker roller lever switch, said second control portion of said control cam means being laterally displaceable with respect to said first control portion in direction of movement cooperating with said main actuating member.

4,484,724

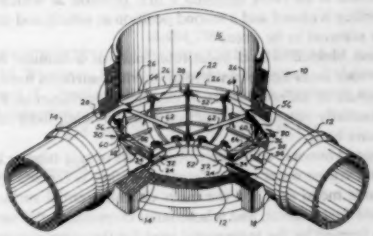
FORMING ELEMENT AND FORMING APPARATUS FOR CASTING MANHOLE INVERTS

James Srackangast, Rt. 2, Box 888-3, Harrisburg, N.C. 28075

Filed Dec. 22, 1982, Ser. No. 452,199

Int. Cl.³ E21D *10/00*

U.S. Cl. 249—11 **25 Claims**



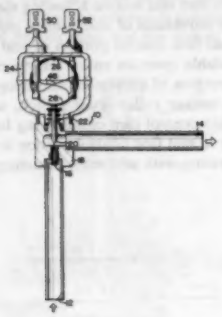
1. A forming element for use in casting pourable cementitious material to form a curvilinear invert section in a manhole, said forming element being equilaterally wedge-shaped and comprising a compoundly-curved molding surface having a transverse extent and a longitudinal extent and being substantially semi-circularly curved in said transverse extent for the entirety of said longitudinal extent and substantially arcuately curved in said longitudinal extent concentrically at each transverse side thereof for the entirety of said transverse extent with the longitudinal ends of said molding surface extending radially relative to the longitudinal curvature thereof, and a transverse end wall at each longitudinal end of said molding surface arranged radially to the longitudinal curvature thereof, said forming element being adapted to be disposed in said manhole with said molding surface in a downwardly facing disposition for pouring and casting of said cementitious material thereabout to cause a depression to be cast in said cementitious material in conformity with the longitudinal and transverse curvatures of said molding surface thereby to form said invert section with a precise longitudinally and transversely arcuate compound curvature.

4,484,725

BIMETAL DRIVEN CONTROL VALVE

Kenji Yoshiga, Funabashi, Japan, assignor to Fuji Koki Manufacturing Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1981, Ser. No. 308,598
Claims priority, application Japan, Feb. 18, 1981, 56-21691[U]
Int. Cl.³ F16K 31/04
U.S. Cl. 251—11 2 Claims



1. A bimetal driven control valve comprising:

a main body having a fluid inflow channel, a fluid outflow channel, and an orifice which connects said fluid inflow channel and said fluid outflow channel;

a valve member which is mounted in said main body and which is movable between a first position at which said orifice is closed and a second position at which said orifice is released to be open;

a first bimetal which constitutes part of a tubular body, whose inner and outer circumferential surfaces have two metals of different thermal expansion coefficients, a substantially outer portion of said bemetal being fixed to said main body;

a second bimetal which constitutes part of said tubular body and whose outer circumferential surface is formed by the same metal used for the inner circumferential surface of said first bimetal, and whose inner circumferential surface is formed by the same metal used for the outer circumferential surface of said first bimetal, the inner circumferential surface of said second bimetal being opposed to the inner circumferential surface of said first bimetal, said first bimetal and said second bimetal being curved outwardly to form said tubular body;

means for connecting respective ends of said first bimetal and said second bimetal;

means for transferring radial movement of a substantially outer portion of said second bimetal to said valve member, and for moving said valve member in correspondence with said radial movement of said outer portion of said second bimetal; and

means for heating said first bimetal;

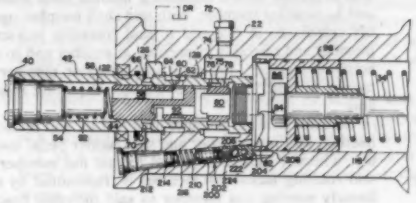
said connnecting means comprising tubular portions which are formed by curling the respective ends of said first bimetal, tubular portions which are formed by curling the respective ends of said second bimetal, a first pin which is inserted into said tubular portions formed at one end of said first bimetal and into said tubular portion formed at one end of said second bimetal, and a second pin which is inserted into said tubular portion formed at the other end of said first bimetal and into said tubular portions formed at the other end of said second bimetal.

4,484,726

PULSATION LIMITER FOR MANUALLY ACTUATED HYDRAULIC VALVE

Probir K. Chatterjea, Mount Prospect, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 2, 1982, Ser. No. 404,190
Int. Cl.³ F16K 31/122
U.S. Cl. 251—51 5 Claims



1. A hydraulic valve mechanism comprising:

a housing having a fluid receiving axial bore and an auxiliary bore intersecting said axial bore;

a valve sleeve slideably disposed in said axial bore and mechanically connected to an external manual actuation means, said sleeve having a first position unactuated by said manual means and a second axially spaced position in response to actuation by said manual means, said valve sleeve further having an abutment surface confronting said auxiliary bore;

a plunger having a cylindrical periphery slideably disposed in close clearance in said auxiliary bore, said plunger having a first end disposed to abut said valve sleeve abutment surface and second end defining, with said auxiliary bore, a closed expansible chamber, said plunger cylindrical periphery having a fluid passage thereon establishing restricted fluid communication for fluid flowing from said expansible chamber and that portion of said auxiliary bore communicating with said axial bore;

biasing means maintaining said plunger in abutting relation with said valve sleeve abutment surface during at least a portion of the travel of said valve sleeve from said first position to said second position; and

a conduit disposed to fill said auxiliary bore expansible chamber with fluid upon movement of said plunger to follow the movement of said valve sleeve from said first position to said second position, said conduit having a check valve disposed to prevent flow from said chamber when said valve sleeve abuts said plunger and moves towards said first position.

4,484,727

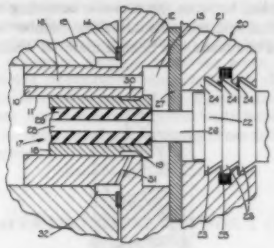
FLUID CONTROL VALVES

Kenneth M. Harris, London; Derek Williams, and Derek W. Tomsett, both of Hertford, all of England, assignors to Lucas Industries Public Limited Company, Birmingham, England

Filed Nov. 8, 1982, Ser. No. 439,816
Claims priority, application United Kingdom, Nov. 11, 1981, 8134042
Int. Cl.³ F16K 31/06
U.S. Cl. 251—77 4 Claims

1. An electromagnetically operable fluid control valve including a valve member and a seating, the valve member being shaped to co-operate with the seating and an electromagnetic device including an armature and a stator, said valve member being in the form of a sleeve, a rod operatively connected to the armature, said rod extending into said sleeve, a resilient bush located between the rod and the interior surface of the sleeve, said bush forming a stiff spring between the armature

and the valve member, and stop means operable to limit the movement of the armature, the valve member being arranged



to contact the seating slightly before the contact of the armature with the stop means takes place.

4,484,728

ROLLING SEAL SLUICE GATE

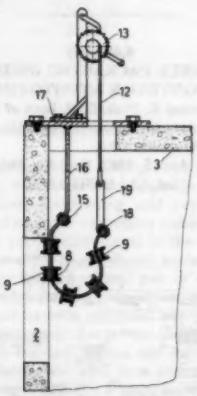
Richard P. Moore, Germiston, South Africa, assignor to Blue Circle Projects (Proprietary) Limited, Johannesburg, South Africa

Filed Aug. 9, 1982, Ser. No. 406,566

Claims priority, application South Africa, Oct. 8, 1981, 81/5457

Int. Cl.³ F16K *31/00*

U.S. Cl. 251—294 **17 Claims**



1. A closure member for a sluice gate opening having a predetermined height and width dimensions comprising:

(a) a flexible, liquid impervious sheet having height and width dimensions greater than those of the sluice opening;

(b) attaching means to attach an upper edge of the flexible sheet to the sluice structure such that the flexible sheet is disposed over an upstream side of the sluice opening;

(c) a plurality of pairs of generally horizontal members attached to the flexible sheet, a first one of the pair being attached to an upstream side and a second one of the pair being attached to a downstream side adjacent the first, such that the pairs are vertically spaced apart from each other, at least some of the reinforcing members on the upstream side of the flexible sheet having a length greater than the width of the sluice opening, and the reinforcing members on the downstream side having a length less than the width of the sluice opening to enable them to move into the opening; and,

(d) control means connected to a lower edge of the flexible sheet for moving the lower edge upwardly or downwardly to open or close the sluice opening.

4,484,729

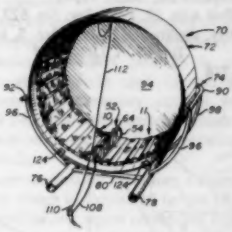
BARRIER COIL DISPENSER

Joseph J. Mainiero, Hauppauge, N.Y.; Michael R. Mainiero, Monroe, and Arthur T. Stanley, Shelton, both of Conn., assignors to Man Barrier Corporation, Seymour, Conn.

Filed Jan. 18, 1982, Ser. No. 340,517

Int. Cl.³ E04H *17/00*

U.S. Cl. 256—1 **15 Claims**



1. A barrier coil dispenser comprising a movable frame, a single coil dispensing drum having a cylindrical side wall and an open end, and rotary support means for supporting the drum on the frame, the drum being automatically rotatable about its central axis coincident with the central axis of the coil therein for coil deployment from the drum in synchronized relation to movement of the frame along a desired barrier trace for controlled barrier coil emplacement free of torsional stress and undesired buckling of the erected barrier in trailing relation to the drum.

4,484,730

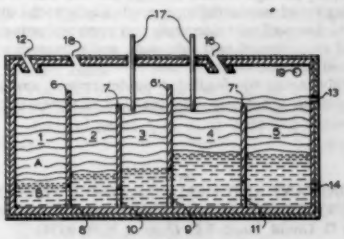
DEVICE FOR LEACHING COPPER FROM SLAGS

Issay M. Dimitrov; Atanas P. Boychev; Vesselin L. Raichev, and Georgi Y. Kostov, all of Sofia, Bulgaria, assignors to ISO "Metalurgkomplekt", Sofia, Bulgaria

Filed Sep. 30, 1982, Ser. No. 431,114

Int. Cl.³ F27B *3/16*

U.S. Cl. 266—201 **8 Claims**



1. A device for leaching copper from slags, which includes: at least first, second and third cells arranged in succession in a common chamber the successive cells each having a side wall, the cells being separated by partitions and serially connected to each other by means of through-holes provided in the bottom part of the partitions the device having a slag and/or matte charging port a reagent feeding port a heating appliance receiving port, and a gas discharge port, all of said ports being disposed in the upper part of the common chamber above the cells therein, a slag discharge opening and a copper matte discharge opening in the outer end wall of the last of the suc-

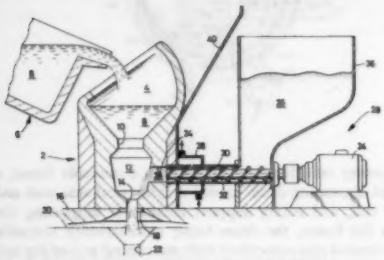
cessive cells, said partitions being alternatingly of greater and smaller height, the heights of the through-holes in the partitions of greater height increasing towards the slag discharge opening and the height of the through-holes in the partitions of smaller height not exceeding the height of the through hole in the first partition between the first and second of the successive cells.

4,484,731

METHOD AND APPARATUS FOR CONTINUOUSLY TREATING MOLTEN METAL

Hirotoshi Taniguchi, 81-173, Aza-Tendoshinden, Oaza-Machara, Inuyama-shi, Aichi, Japan

Filed Aug. 12, 1983, Ser. No. 522,721
Claims priority, application Japan, Dec. 5, 1983, 58-82989
Int. Cl.³ C22C *33/08*
U.S. Cl. 266—216 **6 Claims**



1. An apparatus for continuous treating molten metal with a solid treating agent, which comprises:

a treating vessel having at an upper portion thereof an inlet receiver into which the molten metal is poured, and at a lower portion thereof an outlet passage through which the molten metal is discharged out of said treating vessel after the metal is treated, said treating vessel further having, at a portion thereof between said upper and lower portions, a reaction chamber which communicates with said inlet receiver and said outlet passage and in which the molten metal is brought into contact with the treating agent, said reaction chamber having an inlet leading to said inlet receiver, and an outlet open at one end of said outlet passage, said outlet being narrower than said inlet;

a supply passage formed through the side wall of said treating vessel substantially perpendicularly to the direction of thickness of said side wall, and communicating direction of thickness of said side wall, and communicating with said reaction chamber; and

supply means for feeding a predetermined amount of the treating agent into said reaction chamber through said supply passage.

4,484,732

CONSTANT AND VARIABLE FORCE TENSIONING DEVICES UTILIZING ATMOSPHERIC PRESSURE

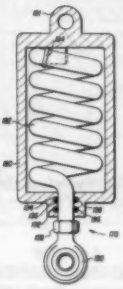
Larry D. Gould, South Rd., Canaan, N.H. 03741

Filed Jun. 1, 1982, Ser. No. 383,419
Int. Cl.³ B60G *11/26*
U.S. Cl. 267—64.14 **12 Claims**

1. A tensioning device for exerting a substantially constant tensional force between two relatively movable parts of a machine or other mechanical system, said tensioning device comprising:

(a) a sealed and substantially evacuated canister having an opening therein for accommodating a movable actuating member;

(b) a movable actuating member projecting into said canister and having one end protruding from the opening in said canister, said movable actuating member having a sliding relationship with the opening in said canister to allow the movable actuating member to be partially withdrawn from the canister through said opening in response to a force applied between the movable actuating member and the canister, said movable actuating member including an elongated rod made of a flexible material which is capable



of collapsing or folding upon itself within the canister, said elongated rod having a total outstretched length greater than the greatest interior dimension of said canister; and

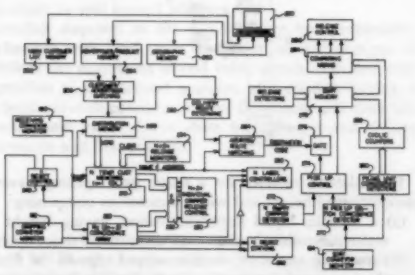
(c) sealing means for creating a sliding vacuum seal between said movable actuating member and the opening in said canister, said sealing means serving to maintain the substantially evacuated condition of said canister.

4,484,733

PROGRAMMABLE PACKAGING GRID INCLUDING GRIPPER CONVEYOR MONITORING SYSTEM

Jerold C. Loos; James R. Wakefield, both of Rocky River, and Frederick S. Foster, Avon Lake, all of Ohio, assignors to Hall Systems, Inc., Westlake, Ohio

Filed Apr. 5, 1982, Ser. No. 365,566
Int. Cl.³ B65H *39/02*
U.S. Cl. 270—54 **11 Claims**



1. A programmable packaging grid for grouping selective ones of a plurality of available printed products to produce customer insert packages comprising:

a plurality of longitudinally extending receiving conveyors each defining a plurality of package receiving areas;

a receiving conveyor monitor means for monitoring the position of the receiving conveyors;

a plurality of gripping conveyors disposed above the receiving conveyors, each gripping conveyors including a plurality of individual grippers running in a loop generally transverse to the receiving conveyors;

a plurality of sources of printed products, each printed prod-

uct source disposed adjacent a gripping conveyor to supply printed products thereto;

a gripper conveyor monitor means for monitoring the position of the gripper conveyors;

control means for controlling the gripping conveyors to release selected printed products to fall into selected receiving conveyor package receiving areas, the control means being operatively connected with the receiving conveyor monitor means and the gripper conveyor monitor means for determining coincidence between the receiving conveyor package receiving areas and the individual grippers.

4,484,734

COPY PAPER FEEDING DEVICE FOR A COPYING APPARATUS

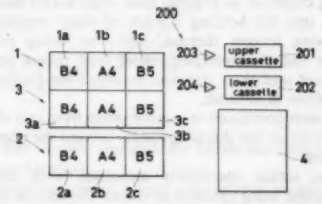
Hideaki Tsudaka; Takaji Washio; Nobuhiko Kozuka; Masahide Iseki; Toshio Watanabe; Masami Kai; Toshio Yoshiyama, and Hiromi Sakata, all of Osaka, Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed Jul. 21, 1982, Ser. No. 400,286

Claims priority, application Japan, Jul. 21, 1981, 56-114940

Int. Cl.³ B65H *1/26, 3/44, 1/04*

U.S. Cl. 271—9 **1 Claim**



1. A copy paper feeding device for a copying apparatus comprising:

a pair of cassettes capable of storing copy paper sheets;

a pair of feeding means, each corresponding to one of said pair of cassettes, for feeding said copy paper sheets; wherein one of said pair of feeding means is driven selectively to feed copy paper sheets in the case where said cassettes store copy paper sheets having two different sizes, and wherein each of said pair of feeding means is driven in a predetermined order so as to feed copy paper sheets from one cassette until said cassette is empty and then to feed copy paper sheets from the remaining cassette successively in the case where said cassettes store copy paper sheets having the same size; and

a pair of means for selecting a feeding means to be driven in order that the selected feeding means feeds copy paper sheets; wherein each of said means for selecting a feeding means corresponds to one of said pair of feeding means;

a display element for indicating sizes of said stored copy paper sheets and having a plurality of first display lamps respectively corresponding to sizes of the copy paper sheets;

an operation device for selecting one of said copy paper sheet sizes and having a plurality of first size selecting switches respectively corresponding to said first display lamps;

a selecting display element for indicating the selected size and having a plurality of second display lamps respectively corresponding to said first display lamps;

a pair of copy paper detecting means for detecting whether copy paper sheets are stored in each of said pair of cassettes, and for detecting the sizes of said stored copy paper sheets;

a control means which is responsive to a signal from said pair of copy paper detecting means for driving said display element for indicating sizes of said stored copy paper sheets, and which is responsive to a signal from said pair of copy paper detecting means and a signal from each of said size selecting switches for driving said selecting display element;

a pair of selective switches for selecting one of said pair of feeding means and a display element having a plurality of display lamps, each of said display lamps being situated so as to respectively correspond to one of said pair of feeding means and indicating the selected feeding means; wherein said control means is responsive to signals from said feeding means selecting switches so as to drive said display element and to drive said feeding means corresponding to said selected cassette;

said operation device including a plurality of flip-flops, each of which is respectively connected to one of said plurality of size selecting switches through a corresponding NAND gate and wherein each of said size selecting switches comprise momentary contact switches, said switches and flip-flops being arranged such that each of said flip-flops is set in response to an operation of its corresponding switch;

said operation device further including a plurality of AND gates, each of which is connected to one of said plurality of flip-flops and having inputs connected to all of said size selecting switches except for said size selecting switch corresponding to its corresponding flip-flop;

said AND gates arranged such that when one of said flip-flops is set, the remaining flip-flops are reset;

said control means including a plurality of OR gates connected to said pair of copy paper detecting means, wherein each of said copy paper detecting means comprise a plurality of individual detectors;

each of said OR gates being respectively connected to one of said NAND gates so as to enable or disable the operation of its corresponding size selecting switch in response to two of said individual detectors which comprise said pair of copy paper detecting means;

said control means further including a plurality of additional OR gates, each of which is respectively connected to two of said individual detectors which comprise said pair of copy paper detecting means;

said OR gates operatively connected to said feeding means so as to enable or disable the operation thereof in response to said copy paper detecting means.

4,484,735

NOTE SEPARATING AND DELIVERING APPARATUS FOR USE IN NOTE HANDLING MACHINE

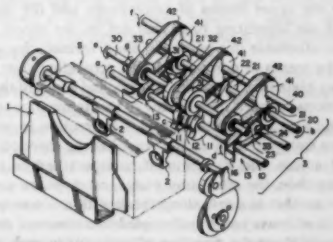
Kowichi Goi, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed May 5, 1982, Ser. No. 375,312

Claims priority, application Japan, May 6, 1981, 56-67928

Int. Cl.³ B65H *3/56, 1/02, 3/08*

U.S. Cl. 271—12 **4 Claims**



1. A note separating and delivering apparatus for use in a note handling machine wherein notes are taken off, one at a

time, from a note holder plate, and delivered to a dispensing section, said apparatus comprising:

a delivery mechanism including

at least one movable suction head for moving the notes one at a time from the note holder plate,

at least one grabbing roller and at least one bite-in roller cooperating therewith to form a nip positioned downstream from the at least one suction head for grabbing the note from the suction head at the middle portion of the note, and

rotatable feeding members positioned on opposite sides of the at least one grabbing roller for feeding the note on opposite sides of the middle portion of the note, the feeding members being adapted for rotation faster than the at least one grabbing roller, and the feeding members being driven independently of the at least one grabbing roller wherein the feeding members guide the sides of the note so that the sides and the middle of the end of the note being fed are brought into the same plane as the note is grabbed and transported.

4,484,736

DEVICE FOR STACKING SHEETS OF PAPER

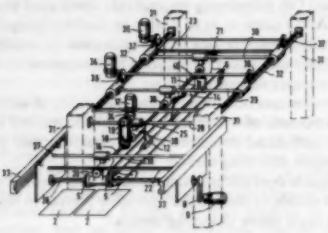
Dieter Osburg, Neuss-Weckhoven, and Peter Voss, Jüchen, both of Fed. Rep. of Germany, assignors to Jagenberg AG, Dusseldorf, Fed. Rep. of Germany

Filed Feb. 18, 1982, Ser. No. 349,944

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1981, 3114414

Int. Cl.[3] **B65H** *29/14, 31/02, 31/20*

U.S. Cl. 271—220 **6 Claims**



1. A device for stacking sheets of paper for transporting to a stacking station in at least two rows, comprising lower and upper means of conveyance including belts wrapped around deflection rollers and which extend over the stacking station, said station composed of several elements including a separating shoe, a separating plate for each row of paper, said separating plate positioned between each path that the sheets are transported along and acting on the longitudinal edges of the sheets, and stops positioned at the end of the transport path, wherein the upper means of conveyance and the separating shoe and the separating plate that act on the sheets and the stops are adjustable to a particular sheet format, characterized in that the means of conveyance, the separating shoe and the separating plate that act on the longitudinal edges of the sheets, and the stops assigned to each row of sheets are all mounted on first guide rails that extend across the direction in which the sheets are transported in such a way that the sheet size can be adjusted across said direction of transport and in that, the separating shoe, the separating plate, and stops are positioned one after another in a row along the direction of transport and, the means of conveyance are coupled to a common drag shaft that extends along the direction of transport in such way that it entrains the separating shoe and the separating plate, and the stops when the means of conveyance are adjusted across the direction of transport.

4,484,737

DEVICE FOR PREVENTING SUBSTRATES FROM JAMMING IN A COPIER

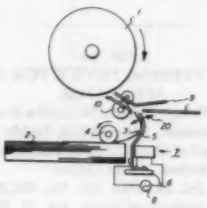
Satoshi Sugiyama, Tokyo, Japan, assignor to Rank Xerox Corporation, Stamford, Conn.

Filed May 23, 1980, Ser. No. 153,109

Claims priority, application Japan, Jun. 28, 1979, 54-087568[U]

Int. Cl.[3] **B65H** *3/36, 3/06*

U.S. Cl. 271—264 **1 Claim**



1. In a reproduction machine having a photoreceptor for producing copies of an original upon copy sheets including

a sheet tray for holding a stack of sheet preparatory to receiving images thereon, said tray being positioned below the photoreceptor, sheet feed means positioned adjacent said sheet tray and arranged for feeding sheets therefrom in seriatim,

guide means positioned to receive sheets from said sheet tray and to direct the sheets upwardly toward the photoreceptor, and

vibration means operatively associated with said guide means and being operable to vibrate the same as sheets are being directed thereby.

4,484,738

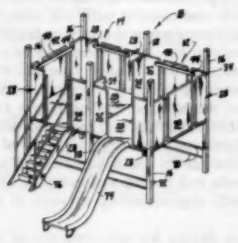
PLAYGROUND DECK

Paul W. Ahrens; Randy R. Juhl; Larry D. Kunce, and Wayne E. Katzer, all of Grinnell, Iowa, assignors to Miracle Recreation Equipment Company, Grinnell, Iowa

Filed May 26, 1982, Ser. No. 382,346

Int. Cl.[3] **A63B** *17/00*; **A63G** *21/00*

U.S. Cl. 272—56.5 R **24 Claims**



1. A playground deck comprising,

a platform having a peripheral edge and being supported by corner posts which extend above said platform with each side of the said platform between a pair of corner posts including a corner panel attached to each of said pair of posts with each panel including wing panels extending along and above adjacent sides of said platform and one of said wing panels on each of said corner panels being positioned on the same side of said platform and being substantially spaced apart therebetween to provide passageways onto and off said platform, at least one of said passageways

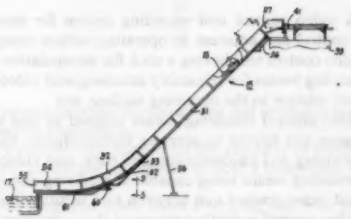
including a removable center panel substantially closing said passageway and being removable from said passageway without disassembly of the remainder of said deck, said center panel including a plate bracket extending adjacent the top and including oppositely disposed end portions overlapping said adjacent wing panels and being secured thereto by removable fasteners therethrough and the bottom of said center panel being secured by removable fasteners adjacent said edge of said platform.

4,484,739

PLASTIC SLIDE FOR SLEDS

Mark L. Kreinbihl, Mansfield, and Robert P. Miller, Wooster, both of Ohio, assignors to Wavetek International, Inc., Mansfield, Ohio

Filed Mar. 15, 1983, Ser. No. 475,452
Int. Cl.³ A63G *21/18*
U.S. Cl. 272—56.5 R **15 Claims**



1. A slide structure for sleds for human occupancy, comprising in combination:

a support framework having a lower section adjacent a pool of water and having an upper section disposed at an acute angle from the horizontal;

said support framework having two sidewalls and a framework base;

plastic sheet material on said support structure base and having an upper surface adapted to be slidably engaged by human occupancy sleds;

path guide portions of said plastic sheet material extending longitudinally relative to said slide structure base to be engageable by a sled should the sled deviate from the median path down the slide;

a manifold connected at the undersurface of said plastic sheet material closely adjacent the top end of said slide support framework;

means to supply water under pressure to said manifold; and

a plurality of holes through said plastic sheet material at said manifold to serve as a water exit from said manifold to the upper surface of said plastic sheet material so that water will form a film on at least that part of the upper surface slidably engageable by the sleds.

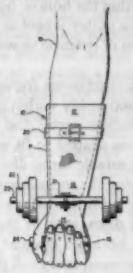
4,484,740

WEIGHT TRAINING DEVICE

Tom M. Green, 41-A E. First Ave., Dugway, Utah 84022

Filed Mar. 17, 1982, Ser. No. 378,773
Int. Cl.³ A63B *21/12*
U.S. Cl. 272—119 **5 Claims**

1. A weight supporting device for attachment to the arm of an exerciser during weight training, which comprises: a rigid, load-bearing, splint-like means adapted to be attached against and to extend along the underside of the forearm from a point sufficiently below the elbow to permit flexing of the arm, to a point in the palm of the hand adjacent the metacarpal-phthlangic joint, said member terminating in an elongated upwardly turned element adapted to provide a cup-like grip for the fingers of a user; means for securely attaching said splint-like



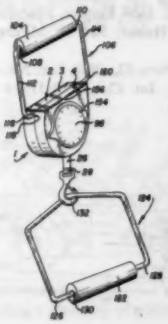
member against the underside of the forearm; and means for securely attaching a training weight to said splint-like member.

4,484,741

EXERCISING APPARATUS

Josef Bingisser, 3121 W. 6th Ave., Vancouver, British Columbia, Canada

Filed Jul. 19, 1983, Ser. No. 515,129
Int. Cl.³ A63B *21/22*
U.S. Cl. 272—131 **7 Claims**



1. An exercising apparatus comprising:

(a) a hollow housing having an aperture extending therethrough and a cavity on one side, the cavity having a cylindrical central portion, the aperture communicating with the center of the cylindrical portion, and at least one slot portion extending outwardly at the edge of the central portion;

(b) a first handle means connected to the housing;

(c) an axle extending rotatably through the center of the housing, the axle having a first portion which is round in section, a second portion, which is square in section, extending through the cavity, and a longitudinal central aperture;

(d) bolt means extending through the aperture of the axle and having a threaded portion extending axially from the second portion;

(e) a pulley wheel within a hollow housing, the pulley wheel having a central aperture, the first portion of the axle extending through the aperture of the pulley wheel;

(f) one way clutch means between the pulley wheel and the first portion of the axle, the one way clutch means permitting free rotation of the pulley wheel in a first direction of rotation and locking the pulley to rotate with the axle in a second direction of rotation which is opposite the first direction;

(g) strap means connected to, and normally wound about, the pulley wheel, the strap means having a free end extending from an opening in the housing;

(h) a spiral spring within the hollow housing and connecting the housing and the pulley wheel to bias the pulley wheel in the first direction of rotation to wind the strap means on the pulley wheel;

(i) a set of at least three adjacent friction discs proportioned to fit freely and removeably within the cavity of the housing, a first non-rotatable metal disc having an outwardly extending projection shaped to fit within the slot portion of the cavity, a a rotatable metal disc with a square central aperture for receiving the second portion of the axle so the center disc rotates with the axle, and a first leather disc between the metal discs, each of the leather disc and the non-rotatable disc having a circular central aperture permitting rotation between said each disc and the axle; and,

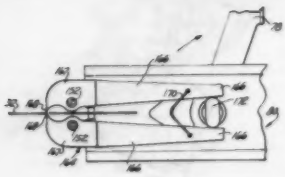
(j) knob means having a threaded aperture for threading the knob means onto the threaded portion of the bolt means, the friction discs being pressed together within the cavity between the knob means and the housing when the knob means is tightened on the bolt means, the knob means being removable from the bolt means to permit replacement of the set of friction discs.

4,484,742

STRINGING TOOL FOR TENNIS RACKETS AND THE LIKE

James G. McCrone, 1654 Empire, Lincoln Park, Mich. 48146, and Warren R. Heiser, 934 N. Mildred, Dearborn, Mich. 48128

Filed Nov. 22, 1982, Ser. No. 443,396
Int. Cl.³ A63B *51/14*
U.S. Cl. 273—73 A **27 Claims**



17. A stringing tool for a racket having a frame surrounding an open area and a plurality of individual strings defining a net-like interlacing covering the open area of said frame, said frame having apertures through which an end of one of said strings is held by means of an anchoring clip, said stringing tool comprising means for gripping one of said strings at an end projecting from said frame, means for displacing said gripping means in a direction placing said string under tension, means for releasing said string upon applying thereon a pull at least equal to a pre-set pulling force, and means for cutting off the portion of said string projecting beyond said frame, wherein said string cut-off means comprises a pair of displaceable opposed cutting edges and means for displacing said cutting edges towards each other with said projecting portion of said string disposed between said cutting edges; said tool further comprising a pair of pivotable arms each having two ends, wherein said cutting edges are formed each on one end of one of said pivotable arms, a rotatable camming member being disposed between the other ends of said pivotable arms, and wherein a lever is attached to said rotatable camming member for rotating said camming member from a position whereby said cutting edges are spread apart to a position causing pivoting of said pivoting arms for displacing said cutting edges toward each other.

4,484,743

MOUNTING SYSTEM FOR A VIDEO CONTROL UNIT

Fred H. Williams, Minneapolis, Minn., assignor to David A. Bartz, Bloomington, Minn.

Filed Mar. 14, 1983, Ser. No. 475,191
Int. Cl.³ A63B *71/04*
U.S. Cl. 273—148 B **10 Claims**

1. A video control unit mounting system for mounting a video control unit adjacent an operating surface comprising:

a video control unit having a stick for manipulative control;

a securing means for releasably attaching said video control unit relative to the operating surface; and

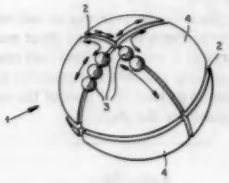
a video control mounting means secured to said securing means and having an aperture formed therein capable of receiving and encompassing said stick, said video control mounting means being capable of receiving and retaining said video control unit between said securing means and video control mounting means so that movement of said video control unit is inhibited during use.

4,484,744

TOY FOR ARRANGING SLIDABLE ELEMENTS IN VARIOUS PATTERNS

Bruno Gmünder, Seon, Switzerland, assignor to Imag-Verlags Ag Für Immaterialgüterrecht, Zug, Switzerland

PCT No. PCT/CH82/00075, § 371 Date Jan. 19, 1983, § 102(e) Date Jan. 19, 1983, PCT Pub. No. WO82/04402, PCT Pub. Date Dec. 23, 1982
PCT Filed Jun. 9, 1982, Ser. No. 460,231
Claims priority, application Switzerland, Jun. 18, 1981, 4024/81
Int. Cl.³ A63F *9/08*
U.S. Cl. 273—153 S **4 Claims**



1. A toy comprising:

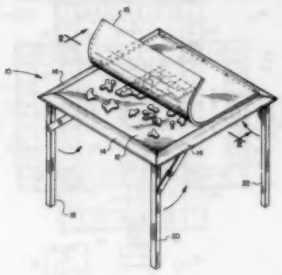
a spherical body with a plurality of intersecting peripheral grooves extending along respective great circles thereof in mutually orthogonal planes, said body being divided into separable segments by said grooves and being provided with fastening means for holding said segments together; and

a multiplicity of differently marked elements slidable in said grooves and insertable into same upon separation of said segments from one another, said grooves being undercut for positively retaining said elements therein.

4,484,745
JIGSAW PUZZLE ASSEMBLY AND STORAGE APPARATUS

John R. Sleeper, 1201 Hemlock Ct., Plano, Tex. 75023

Filed Jun. 6, 1983, Ser. No. 501,631
Int. Cl.³ A63F 9/10
U.S. Cl. 273—157 R 11 Claims



1. An apparatus useful for assembling and storing at least one jigsaw puzzle comprising:

a ferromagnetic base portion for the assembly of component jigsaw puzzle pieces adapted to hold a completed jigsaw puzzle;

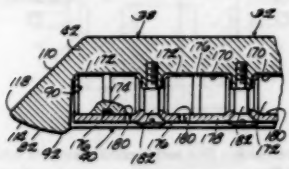
a flexible magnetic cover sheet overlying said base portion and hingeably coupled to said base portion along at least one edge thereof, said cover sheet adapted to impart a compressive force upon said component puzzle pieces due to the magnetic attraction exerted between said ferromagnetic base portion and said magnetic cover sheet; and

a plurality of folding support members attached to the bottom of said base portion and adapted to support said base portion in a substantially horizontal position.

4,484,746
GOLF PUTTER

Edward F. Brill, 5150 Lakeshore Dr., Oconomowoc, Wis. 53066

Continuation-in-part of Ser. No. 113,651, Jan. 20, 1980, abandoned. This application Apr. 21, 1982, Ser. No. 370,379
Int. Cl.³ A63B 53/00
U.S. Cl. 273—167 A 15 Claims



1. A golf putter comprising a club head and a shaft connected to said club head:

said club head having an elongated body including a longitudinal axis extending generally perpendicularly to the putting direction when said club head is in an upright address position for striking a golf ball, a top, a sole, opposed ends and opposed sides, at least one of said sides extending generally parallel to the longitudinal axis of said body and including a putting face;

vertical aiming indicia on said putter normal to said longitudinal axis and visible when said putting face is tilted rearwardly to transversely align said putting face relative to a selected line of putt;

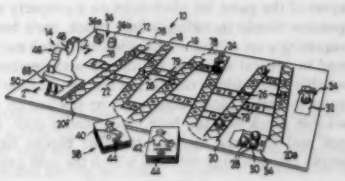
a substantial portion of the juncture between said sole and said side opposite to said putting face forming a sharp corner which extends longitudinally in a substantially straight line generally parallel to the longitudinal axis of said body, said corner resting on a golf green surface when a golfer tilts said shaft and said club head from an address position to an aiming position wherein said putting face is tilted away from the ball to facilitate alignment of said putting face to provide a desired putting line, said corner in the tilted position of the club head being the part of the head and serving as a biting edge means for resisting endwise turning of said club head relative to the desired putting line as the golfer starts to tilt said club head from an aiming position toward an address position; and

said sole having longitudinally spaced convex surface portions at least at opposite ends of said biting edge means extending downwardly and forwardly beyond said corner and towards said putting face, said convex surface portions being the lowest portions of said sole for maintaining rolling contact with the green surface to thereby resist endwise turning of said club head relative to the desired putting line after said corner is elevated from the green surface during continued movement of said club head from an aiming position position to an address position.

4,484,747
BOARD GAME WITH PLAYING PIECE DISPENSER

Jeffrey D. Breslow, Highland Park; John V. Zaruba, Chicago, and Donald A. Rosenwinkel, Tinley Park, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Sep. 27, 1982, Ser. No. 424,354
Int. Cl.³ A63F 3/00
U.S. Cl. 273—243 16 Claims



1. A board game comprising:

a game board defining a plurality of associated playing positions;

a first set of playing pieces;

a second set of playing pieces;

a chance selection device for governing the movement of said first and second sets of playing pieces from one playing position to another;

means for resolving the simultaneous joint occupation of the same position by playing pieces of the first and second sets, said means including a deck of cards, said cards bearing indicia indicating a point accumulation and resolution of the joint occupancy of said playing position; and

a dispensing means for dispensing playing pieces received in one orientation onto said game board in a different orientation.

4,484,748
GOOD MANUFACTURING PRACTICES BOARD GAME

Thomas D. Becze, Chesterfield, Va., assignor to GMP Institute, Inc., Cincinnati, Ohio

Filed Mar. 31, 1982, Ser. No. 363,936
Int. Cl.³ A63F 3/00, 9/18
U.S. Cl. 273—256 2 Claims

1. A board game for providing a player with a working knowledge of business practices, comprising:

a playing board having a playing surface including a plurality of spaces forming a path of movement over which a player advances during play of the game;

a plurality of playing pieces for indicating each player's position on one of said spaces;

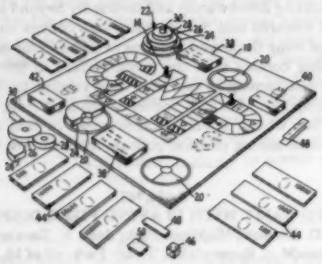
a first set of cards containing information in the form of questions and answers relating to situations that are encountered in business;

a second set of cards containing information relating to awards associated with good business practices;

a third set of cards containing information relating to penalties encountered by a businessman;

chance indicator means for controlling movement of said playing pieces over said spaces;

a plurality of property areas divided into sections which are



separately acquirable by the players or the game, which areas do not comprise a portion of the path of movement; and

vertical expansion blocks which can be acquired by the players of the game for placement on a property area, the expansion blocks including a base block, each base block comprising a set of base block portions which each correspond in general shape to a property area section, a first stackable block which can be stacked on the base block, a second stackable block which can be stacked on the first stackable block and the base block, and a post, the base block and first and second stackable blocks having an opening therethrough through which the post can extend.

4,484,749

GAMEBOARD HAVING SEPARABLE AND REVERSIBLE GAMEBOARD ELEMENTS

Fred D. Charney, 575 Third St., Brooklyn, N.Y. 11215

Filed Apr. 11, 1983, Ser. No. 483,762

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—283 **7 Claims**

1. A gameboard set, comprising:

a plurality of separate gameboard elements assemblable with one another to form a gameboard,

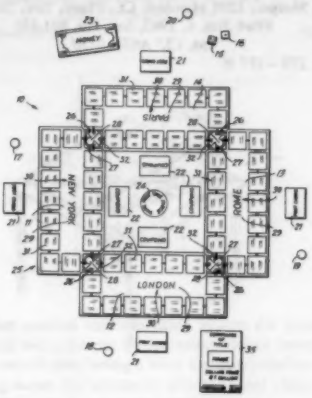
each of said gameboard elements having at least two corners and two oppositely facing major surfaces, one of which carries one playing surface region, and the other of which carries another playing surface region.

said one playing surface region forming playing surfaces of different configurations upon assembly of said gameboard elements in various combinations with one another,

said other playing surface region forming additional playing surfaces of still other different configurations upon such assembly,

said other playing surface region of one of said gameboard elements being compatible with said one playing surface region of another of said gameboard elements such as to be combinable therewith into further different configuration constituting further playing surfaces upon such assembly of said gameboard elements and so that at least one of said other playing surface regions faces in the same direction as at least one of said one playing surface regions, and

means for interconnecting said gameboard elements with one another upon assembly, including compatible male and female formations at said corners, said male formations being received in said female formations upon assembly.



4,484,750

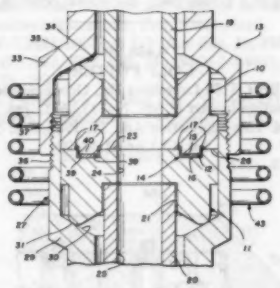
HIGH PRESSURE SEAL JOINT

David M. Scruggs, San Juan Capistrano, Calif., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 394,191, Jul. 1, 1982, abandoned. This application Nov. 3, 1983, Ser. No. 548,542

Int. Cl.³ F16J *9/00*; F16K *41/00*; F16L *53/00, 13/00*

U.S. Cl. 277—9 **14 Claims**



1. A joint comprising first and second members with a first surface on said first member abutting a second surface on said second member so as to define a capillary clearance therebetween, a groove formed in said first surface and a projection integrally formed with said second member and protruding from said second surface into said groove, a meltable seal material disposed within said groove in wetted contact with the sides of said groove and said projection and originally sealing against high pressure fluid leakage between said members, quell means on one of said members adjacent opposite sides of said projection to keep said material from flowing through said capillary clearance by capillary action from between said members when said material is heated and melted, and means separate from said seal material for mechanically connecting said first and second members together to allow said material to be heated to rewet the sides of said groove and said projection so as to reform the original seal between said first and second members in the event the original seal begins to leak.

4,484,751

CRANKCASE HOUSING COVER WITH SEALING MEANS

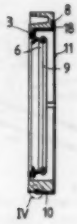
Hans Deuring, Burscheid, Fed. Rep. of Germany, assignor to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Feb. 13, 1984, Ser. No. 580,421

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1983, 3305765

Int. Cl.³ F16J *15/10*; F02B *77/00*

U.S. Cl. 277—12 **14 Claims**



1. A housing cover for closing and sealing an opening of a housing from which a shaft-like member projects, comprising

(a) a main body;

(b) means for defining, in said main body, an aperture through which the shaft-like member is adapted to pass;

(c) a first elastomer seal vulcanized to said main body about said aperture for sealingly cooperating with the shaft-like member;

(d) a second elastomer seal vulcanized to said main body at a distance from, and in a different plane than said first elastomer seal for sealingly cooperating with the housing; and

(e) elastomer sealing elements connecting said first and second elastomer seals with one another.

4,484,752

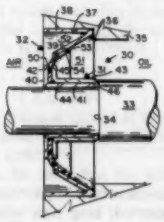
ROTATING-LIP BIDIRECTIONAL HYDRODYNAMIC OIL SEAL

Gustavus A. Bentley, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Mar. 8, 1984, Ser. No. 587,371

Int. Cl.³ F16J *15/34, 15/54*

U.S. Cl. 277—25 **39 Claims**



1. A rotating-disc bidirectional hydrodynamic oil seal, for use between a shaft and a housing bore, one of which is a stationary member, the other of which is a rotating member, to retain oil in an oil reservoir, including in combination:

a rigid member having a peripheral frustoconical portion extending toward said rotating member and having a disc-engaging surface on the side facing said rotating member, and

a sealing assembly having a supporting portion for mounting with a leak-tight fit on said rotating member and supporting a flexible sealing disc that extends radially outwardly and tends to assume a substantially radial position, said disc having an outer edge and first and second opposite faces, said first face engaging and flexed by said disc-engaging surface, the oil in said reservoir being functionally in communication with at least a portion of said outer edge and said second face,

the centrifugal force of rotation of said rotating member in either direction tending to urge said first face more snugly against said disc-engaging portion, so that oil is effectively prevented from passing out between said disc and said disc-engaging portion and any oil that may have so passed tends to be returned to said oil reservoir.

4,484,753

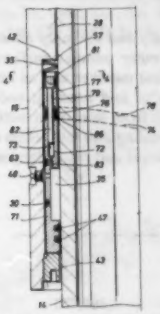
ROTARY SHAFT SEAL

Manmohan S. Kalsi, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Jan. 31, 1983, Ser. No. 462,464

Int. Cl.³ F16J *15/16*

U.S. Cl. 277—27 **25 Claims**



1. A rotary shaft seal system for sealing an annular space between a rotating shaft and its housing, comprising:

annular seal means having upper and lower engaging surfaces and having an axially variable configuration about a rotating shaft so that one sealing surface of said seal means slidably engages said rotating shaft;

first and second means for matingly engaging the upper and lower engaging surfaces of said seal means and arranged to permit relative longitudinal movement with respect to one another;

means actuated by a differential fluid pressure for biasing said first and second engaging means toward one another; and

means for substantially preventing contact of said seal means with the fluid in the environment of said housing.

4,484,754

RING SEAL WITH OVERLAPPING FLANGES FOR CONTAMINANT TRAPPING

Michael J. Ballard, P.O. Box 15384, Baton Rouge, La. 70895

Filed Jan. 31, 1984, Ser. No. 575,709

Int. Cl.³ F16J *15/44*

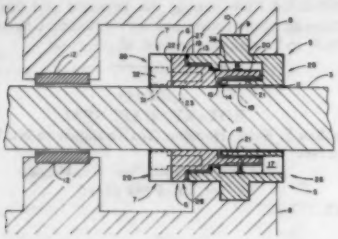
U.S. Cl. 277—53 **13 Claims**

1. A ring seal between a housing and a rotatable shaft, comprising:

(a) a first ring member generally concentric with a rotatable shaft and fixedly and sealingly attachable to a housing between said housing and said shaft, said first member having an outer annular surface facing externally of said housing and an inner annular surface facing internally of said housing; an annular recess in said inner surface, forming an outer first annular flange axially adjacent to said housing and an inner second annular flange axially adja-

cent to said shaft; an annular third flange extending perpendicular to and radially inward from said first flange partially into said recess, forming an annular channel; and an opening parallel to said shaft and opening from the lowest point in said channel to said outer annular surface of said first member; and

(b) a second ring member generally concentric with said



shaft, being fixedly and sealingly attachable to said shaft, and having an outer annular surface facing said inner surface of said first member and an inner annular surface facing internally of said housing; and an annular flange extending axially from said outer surface of said second member and extending into said recess in said first member between said second and third flanges of said first member.

4,484,755

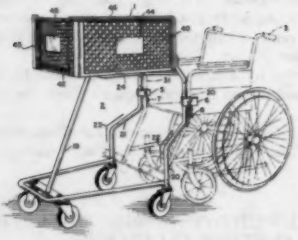
WHEELED CART FOR USE BY HANDICAPPED, INVALID AND FRAIL PERSONS

Rehrig Houston, 4539 Gorham St., Corona Del Mar, Calif. 92625

Filed Sep. 30, 1982, Ser. No. 428,854

Int. Cl.³ A61G 5/02

U.S. Cl. 280—33.99 A **11 Claims**



1. A wheeled conveyance attachable to the front vertical support members of a wheelchair, said wheeled conveyance comprising:

a basket; and

a chassis having a plurality of casters, first and second rear vertical members, means for supporting said basket, and means for readily attaching and detaching each respective first and second rear vertical members to said front vertical members of said wheelchair, said first and second rear vertical members each having a lower dogleg portion that is sufficiently angled forwardly, downwardly and outwardly to provide clearance for the front wheels and footrests of an attached wheelchair.

4,484,756

BLANK TUBE AND MAIN FRAME FOR TWO-WHEELED VEHICLE

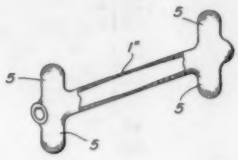
Kikuzo Takamiya, Kitamoto; Hiroshi Todoroki, and Shuichi Taniguchi, both of Ageo, all of Japan, assignors to Bridgestone Cycle Co., Ltd., Tokyo, Japan

Filed Nov. 2, 1982, Ser. No. 438,494

Claims priority, application Japan, Nov. 4, 1981, 56-176674; Nov. 4, 1981, 56-176676; Nov. 6, 1981, 56-177037; Jun. 24, 1982, 57-93679[U]; Jun. 24, 1982, 57-93680[U]

Int. Cl.³ B62K 3/02

U.S. Cl. 280—281 R **12 Claims**



1. A blank tube for a two-wheeled vehicle, comprising a main tubular portion having thicker walls towards the ends and tubular expanded portions extending in a direction substantially transverse to a major axis of said tube from at least one end of the thicker wall of said main tubular portion, said thicker walls and said tubular expanded portions being formed in dies by applying high hydraulic pressure to an inside of said tube and simultaneously applying compressive force to said tube in its axial direction.

4,484,757

MOBILE SUBSTATION

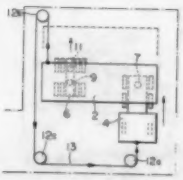
Akira Nishikawa, Nara, and Shinichi Okazaki, Kawanishi, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Nov. 10, 1982, Ser. No. 440,595

Claims priority, application Japan, Nov. 24, 1981, 56-188592

Int. Cl.³ B62D 53/04

U.S. Cl. 280—423 R **3 Claims**



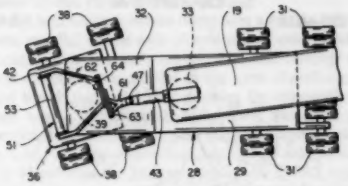
2. A mobile substation comprising a chassis on which substation equipment is carried; king pins which are respectively fixed at both end parts of said chassis; a tractor which includes a coupler that is detachably coupled to either of said king pins and which supports one of said end parts of said chassis; a bogie truck which includes a coupler that is detachably coupled to the other king pin and which supports the other end part of said chassis; supporting legs which are respectively disposed at said both end parts of said chassis and which support said chassis when said chassis is being attached to or detached from said couplers of said tractor and said bogie truck; and means for moving said chassis orthogonally to its lengthwise direction comprising a traction cable which couples said chassis and said tractor to each other through blocks.

4,484,758

SELF-STEERING TRAILER

Harley W. Murray, Stockton, Calif.; Howard P. Burnell, Calgary, Canada, and David H. Murray, Stockton, Calif., assignors to Harley Murray, Inc., Stockton, Calif.

Filed Nov. 26, 1982, Ser. No. 444,852
Int. Cl.³ B62D *13/04*
U.S. Cl. 280—442 **17 Claims**



1. In a self-steering trailer for use with a pulling vehicle: an elongated main frame pivotally connected toward the front end thereof in load supporting relation to the pulling vehicle, a subframe having ground engaging wheels toward one end thereof positioned toward the rear end of the main frame, means pivotally connecting the rear portion of the main frame to the subframe in load supporting relationship, a dolly having ground engaging wheels positioned toward the other end of the subframe, means pivotally connecting the subframe to the dolly in load supporting relationship, and steering means interconnecting the main frame and the dolly for automatically turning the dolly relative to the main frame in response to lateral movement of the rear end of the main frame to steer the rear of the trailer in accordance with said lateral movement, said steering means comprising an arm having two sections which can be shifted laterally of each other connected between the rear portion of the main frame and the dolly.

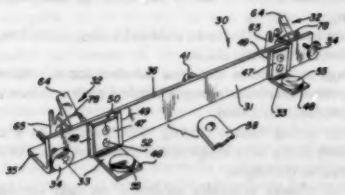
14. In a self-steering trailer for use with a pulling vehicle: an elongated main frame pivotally connected toward the front end thereof in load supporting relation to the pulling vehicle, a subframe having ground engaging wheels toward one end thereof positioned toward the rear end of the main frame, means pivotally connecting the rear portion of the main frame to the subframe in load supporting relationship with the dolly being rotatable relative to the subframe about a vertically extending axis, steering means interconnecting the main frame and the dolly for automatically turning the dolly about the axis in response to lateral movement of the rear end of the main frame to steer the rear of the trailer in accordance with said lateral movement, and means including a manually controlled actuator for pivoting the dolly about the vertically extending axis to further steer the rear of the trailer.

4,484,759

HITCH ASSEMBLY FOR A SINGLE WHEEL TRAILER

David J. Zwick, Stoystown, Pa., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Sep. 29, 1982, Ser. No. 428,385
Int. Cl.³ B60D *1/00*
U.S. Cl. 280—460 R **16 Claims**



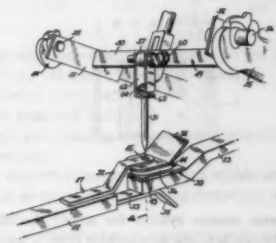
1. A hitch assembly for releasably connecting a vehicle to a trailer which is to be towed by the vehicle, the vehicle having a rear bumper and a trailer hitch extending rearwardly beyond the rear bumper, the hitch assembly comprising an elongated bar adapted to be attached to the trailer hitch so that the bar extends generally parallel to and spaced from the rear bumper, a pair of L-shaped angles adjustably mounted on the bar at spaced-apart positions, each angle having a first portion attached to the bar and a second portion adapted to extend beneath the rear bumper, means for adjustably mounting the first portion of each angle on the bar so that the position of the second portion of the angle relative to the rear bumper can be adjusted, a pair of bumper pads adjustably mounted on the bar at spaced-apart positions and adapted to engage the rear of the rear bumper, and means for adjustably mounting the bumper pads on the bar so that the bumper pads can be moved toward and away from the rear bumper.

4,484,760

REMOTE CONTROL HITCH

Lester G. Rach, Box 308, Bertha, Minn. 56437

Filed Sep. 30, 1982, Ser. No. 434,313
Int. Cl.³ B60D *1/10*
U.S. Cl. 280—477 **17 Claims**



6. A hitch for connecting a first movable device to a movable second device comprising: first means connected to the first device, sid first means having guide means providing a generally U-shaped socket and a generally upright first hole open to said socket, said second device having an elongated tongue, biasing means connected to said tongue to hold said tongue in a generally horizontal position, second means connected to the tongue, said second means having a member engageable with said guide means and positionable in said U-shaped socket and a second hole aligned with the first hole when the member is located in the socket, pin means movable to a draft position and a release position, said pin means when in a draft position being located in said first and second holes to connect the first means to the second means, said pin means when in the release position being separated from the said hole, thereby allowing the first means and the second means to be separated from each other, means for guiding the pin means including an upright member secured to the pin means, frame means mounted on the first means having means for controlling up and down movement of the upright member, and power means comprising winch means having cable means connected to said upright member, operable to move said pin means to said release position to said draft position and from said draft position to said release position, and motor means for driving the winch means whereby said cable means moves the upright member in up and down directions.

10. A hitch for coupling the tongue of a drawn vehicle to the draw bar of a tractor having vertically movable draft links comprising:

guiding means and coupling means mutually configured to assume a predetermined relative spacial relation upon engagement, said guiding and coupling means having holes which are vertically coaxial in said predetermined relation;

connecting structure attaching one of said means on the vehicle tongue, means mounting the other means on the tractor draw bar;

a hitch pin; and

means mounting said pin on said draft links for movement with said draft links between a first position, in which said pin passes through said holes, and a second position, in which said pin is moved out of said holes.

4,484,761

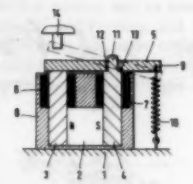
MAGNETIC RELEASE SYSTEM FOR SAFETY SKI BINDINGS

Walter Knabel, Murnau; Gerd Klubitschko, and Lorenz Stempfhuber, both of Oberau, all of Fed. Rep. of Germany, assignors to Marker-Patentverwertungsgesellschaft mbH., Baar, Switzerland

Filed Jul. 13, 1982, Ser. No. 397,816

Int. Cl.³ A63C 9/08

U.S. Cl. 280—612 **6 Claims**



1. A magnetic release system for safety ski bindings for releasing a ski boot holding mechanism from a latching to an unlatching position on receipt of an electrical signal, said magnetic release system comprising;

a permanent magnet;

release means capable of movement relative to said permanent magnet between an actuating and a non-actuating position for actuating a ski boot holding mechanism from a latching to an unlatching position;

temporary magnetic means including at least one core fixedly secured to said permanent magnet for magnetically retaining said release means in said non-actuating position; wherein said permanent magnet induces a temporary magnetic field in said temporary magnetic means;

electro-magnetic means fixedly secured to said temporary magnetic means for inducing a magnetic field in said temporary magnetic means on receipt of an electrical impulse; said magnetic field induced by said electro-magnet opposing said magnetic field induced by said permanent magnet; said magnetic field induced by said electromagnet in said temporary magnetic means thereby diminishing said magnetic field induced by said permanent magnet in said temporary magnetic means;

spring means, biasing said release means from said non-actuating to said actuating position, for forcing said release means from said non-actuating to said actuating position when said electro-magnetic means diminishes the magnetic field induced by said permanent magnet in said temporary magnetic means, and

guide means for guiding said release means from said non-actuating to said actuating position, said guide means including an opening in said release means, a pin on said core for entering said opening, and a pivot axis about which said release means is pivotally movable from its non-actuating to its actuating position, wherein said release means reciprocates relative to said pin.

4,484,762

SKI BINDING AND BOOT

Georges P. J. Salomon, Annecy, France, assignor to Salomon S.A., France

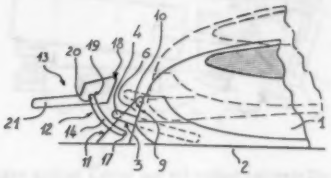
Continuation of Ser. No. 116,847, Jan. 30, 1980, Pat. No. 4,382,611. This application Aug. 17, 1982, Ser. No. 408,845

Claims priority, application France, Jan. 31, 1979, 79 02513

The portion of the term of this patent subsequent to May 10, 2000, has been disclaimed.

Int. Cl.³ A63C 9/18

U.S. Cl. 280—615 **2 Claims**



1. A ski binding for securing one end of a boot or shoe having a support zone to a ski, said binding comprising:

(a) a support element adapted to be mounted on said ski, said support element comprising an abutment zone;

(b) a latching element adapted to be mounted on said boot;

(c) a movable latch adapted to exert a force for forcing said support zone of said boot against said abutment zone, wherein said support element is adapted to be disposed between said latching element and said support zone.

4,484,763

HEELHOLDER FOR A SAFETY SKI BINDING

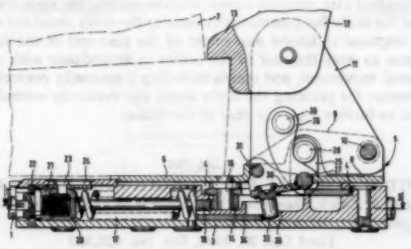
Gerhard Sedlmair, Farchant, Fed. Rep. of Germany, assignor to Marker-Patentvertwertungsgesellschaft mbH., Baar, Switzerland

Filed Feb. 9, 1982, Ser. No. 347,192

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1981, 3107230

Int. Cl.³ A63C 9/085

U.S. Cl. 280—618 **4 Claims**



1. A heelholder for a safety ski binding, said heelholder comprising:

a base member attachable to a ski extending in the longitudinal direction of the ski;

a carriage mounted in said base member for movement in a transverse direction along a curved path relative to said longitudinal direction;

retaining spring means biasing said carriage to a normal position along said longitudinal direction and out of said transverse direction;

a pair of cheeks pivotally mounted on said carriage for rotation about an axis transverse to said longitudinal direction between a closed position and a releasing position;

a heel-releasing mechanism attached to said cheeks, said heel-releasing mechanism assuming a heel engaging position when said cheeks are in the closed position and said heel-releasing mechanism being out of the heel engaging position when said cheeks are in the releasing position; and

locking means for releasably locking said cheeks in the closed position, said locking means releasing said cheeks for movement to the releasing position in response to movement of said carriage beyond a predetermined distance in said transverse direction;

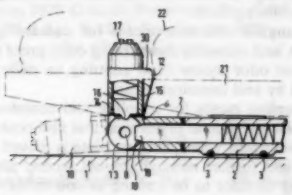
wherein said locking means comprises a toggle joint having axes parallel to the axis of rotation of said cheeks and a locking lever pivotally mounted on said carriage for rotation about an axis parallel to the axes of said toggle joint and biased into a locking position for releasably locking said toggle joint, said locking lever having a pin connected thereto, and said base member formed with a cam groove for cooperating with said pin to release said locking lever from the locking position to unlock said toggle joint when said carriage moves beyond said predetermined distance in the transverse direction.

4,484,764

FRONT BINDINGS FOR SAFETY SKI BINDINGS

Bernhard Kirsch, Im Litzelholz 23, D-5500 Trier-Biewer, Fed. Rep. of Germany

Filed Jun. 2, 1982, Ser. No. 384,362
Int. Cl.³ A63C 9/08
U.S. Cl. 280—628 **13 Claims**



1. In a safety ski binding for releasably holding a ski boot on a ski, a front binding comprising in combination:

a securing member;

means for mounting said securing member on the ski for movement generally parallel to the upper surface of the ski in a direction transversely of the longitudinal direction of the ski;

a spindle carried by said securing member for movement therewith and extending transversely of the longitudinal direction of the ski, generally parallel to the upper surface of the ski and below the plane of the ski boot sole;

a sleeve mounted on said spindle for movement therewith, said sleeve having a groove in its outer periphery which groove extends transversely to the longitudinal direction of the ski and generally parallel to the upper surface of the ski;

at least one sole holder element carried by said sleeve and having stops normally engaged against the ski boot to deter movement of the ski boot longitudinally and laterally of the ski, said sole holder element being forwardly swingable about the axis of said spindle into a position below the plane of the ski boot sole so as to permit unimpeded movement of the ski boot relative to said sole holder element; and

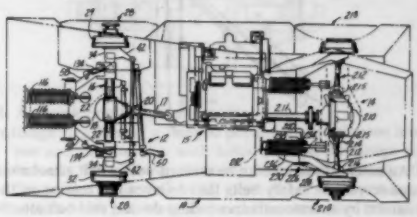
means for normally holding said sole holder element in its position deterring movement of the ski boot but releasable when a force in excess of a predetermined force is exerted against said sole holder element, said holding means including a projection normally engaged in said groove of said sleeve but displaceable therefrom by movement of said sleeve transversely to the longitudinal direction of the ski so as to permit rotation of said sleeve and forward swinging of said sole holder element.

4,484,765

SUSPENSION SYSTEM FOR WHEELED VEHICLES

Irving Appelblatt, West Bloomfield; Theodore A. Jackson, Utica, and James D. Crabtree, Crabtree, all of Mich., assignors to Cadillac Gage Company, Warren, Mich.

Continuation of Ser. No. 100,602, Dec. 5, 1979, abandoned, which is a continuation of Ser. No. 842,213, Oct. 14, 1977, abandoned. This application Dec. 28, 1981, Ser. No. 334,696
Int. Cl.³ B60G 4/14
U.S. Cl. 280—725 **5 Claims**



1. An extended travel suspension system for a high performance off-road vehicle or the like comprising:

(A) A vehicular structure;

(B) An axle assembly including

(a) A rigid axle housing extending transversely to said vehicle structure,

(b) Axle driveshaft means journalled within said housing for rotation about an axis extending transverse to said vehicle structure, and

(c) A pair of universal joint connections at opposite ends of said axle housing respectively drivingly connected to opposite ends of said axle driveshaft means and adapted to be respectively drivingly coupled to a pair of ground engaging wheel assemblies;

(C) A folding linkage extending between said vehicular structure and said axle housing and including

(a) a pair of trailing arms extending forwardly from said axle housing and each having its forward end pivotally connected to said vehicular structure at a point spaced substantially outboard of the longitudinal center line of the vehicular structure and above said axis and having its rearward end pivotally connected to said axle housing at a fold point spaced forwardly from said axis and lying generally in the plane containing said axis and the points of pivotal connection of the trailing arms to the vehicular structure,

(b) A pair of extension arms respectively secured to opposite ends of said axle housing and extending radially upwardly from said axle housing,

(c) A pair of constraining links each respectively pivotally connected at its rearward end to the free upper end of an extension arm and extending forwardly therefrom above and generally over a respective trailing arm for pivotal connection at its forward end to said vehicular structure, said constraining links, trailing arms and extension arms coacting in response to upward travel of an associated wheel assembly to move the associated fold point upwardly out of said plane and delimit the excusion of the associated universal joint connection; and

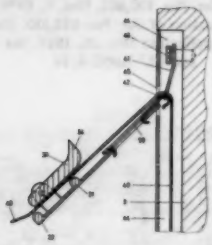
(D) Means connected between said folding linkage and said vehicular structure for absorbing shock loads imparted to said axle assembly through such upward travel of said wheel assemblies.

4,484,766

UNIVERSAL EXTENSION BRACKET FOR A SAFETY BELT ATTACHMENT FOR AUTOMOBILES

Robert B. Buchmeier, Waffenplatzstr. 87, 8002 Zürich, Switzerland

Filed Jan. 27, 1983, Ser. No. 461,355
Claims priority, application Switzerland, Dec. 2, 1982, 873/82
Int. Cl.³ A62B *35/02*; B60R *21/10*
U.S. Cl. 280—808 6 Claims



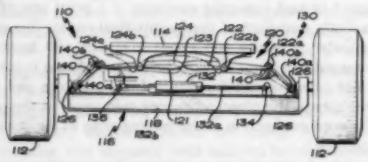
1. An extension bracket to be utilized with a belt attachment for motor vehicle safety belts that relieves the tension in the belt caused by an automatic rewinding device, said belt attachment generally comprising a base plate, a releasable belt clamping means attached to said base plate, means defining at least one opening in said base plate, and means disposed on said base plate for attaching said base plate to the motor vehicle, said extension bracket for the purpose of providing a universal adoptation of said belt attachment to various automobiles, said extension bracket comprising a generally flat plate having a rounded belt support at one end thereof, and a flared annular flange disposed about a mid-portion thereof for attachment within said one opening in said base plate of said belt attachment.

4,484,767

ANTI-SWAY SUSPENSION

Richard H. Klem, 4242 Eastwest Hwy., Apt. 713, Chevy Chase, Md. 20815

Filed Mar. 23, 1982, Ser. No. 361,534
Int. Cl.³ B62D *9/02*
U.S. Cl. 280—772 12 Claims



1. An antiroll suspension for suspending at least one wheel from a vehicle body, said suspension comprising:

wheel supporting means, at least one of said wheels being mounted to said supporting means;

means suspending said body from said wheel supporting means, said suspending means comprising means for translating the lateral inertia of said vehicle body during cornering into lateral translational movement of said vehicle body relative to said supporting means;

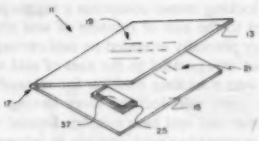
spring means associated with each of at least two of said wheels, each said spring means having a first end pivotably attached to said supporting means and a second end pivotably attached to said vehicle body, said spring means being compressible and expandable substantially lineraly between said first and second ends and angling upwardly and inwardly from said first end to said second end so that lateral movement increases compression of the outer spring and reduces compression of the inner spring.

4,484,768

GREETING CARD

Lincoln H. Norfleet, 3461 Meier St., Memphis, Tenn. 38118

Filed Sep. 30, 1983, Ser. No. 537,503
Int. Cl.³ B42D *15/02*
U.S. Cl. 283—1 B 1 Claim



1. An improved greeting card of the type including a first plate on which an opening message is located and including a second plate on which a further message is located, said first plate normally covering said further message on said second plate whereby said first plate has to be moved in order to view said further message on said second plate, wherein the improvement comprises:

(a) an odor means for emitting an odor, said odor means comprising an absorbant member containing a volatile odor-emitting fluid,

(b) a frangible container means for containing said odor means, said container means being odor-proof for preventing said odor means from emitting an odor when contained by said container means,

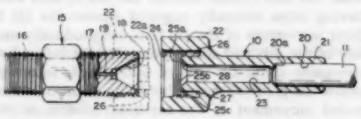
(c) a coupling means for coupling said container means to said first and second plates such that said container means will be broken when said first plate is moved in order to view said further message or said second plate, and for causing an odor to be emitted as said further message is viewed, said coupling means includes a first adhesive member for fixedly attaching said container means to said first plate, a second adhesive member for fixedly attaching said container means to said second plate and a removable cover member for temporarily covering one of said adhesive members to allow said second plate to be personalized before said container means is fixedly attached to both said first and second plates.

4,484,769

NON-RIGID UNIVERSAL COUPLING FOR HEALTH RELATED EQUIPMENT

William J. Lacey, Northport, N.Y., assignor to Hospitak, Inc., Lindenhurst, N.Y.

Filed Mar. 9, 1983, Ser. No. 446,662
Int. Cl.³ F16L *25/00*
U.S. Cl. 285—12 7 Claims



1. A universal adaptor for selectively coupling flexible tubing to equipment having male fittings of at least two different outside diameters, the larger of which has a threaded exterior surface, the invention comprising:

a body portion having an inner end apertured to receive a flexible tube;

an enlarged outer end having a soft radially outwardly deformable hollow section having substantially cylindrical inside diameter to grip the exterior threaded surface of the male fitting thereof to establish resistance against axial movement; and

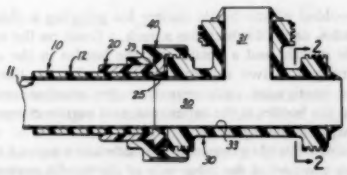
a coaxial inner hollow substantially cylindrical section integral with the outer section and formed of relatively soft deformable material having a hardness rating in the range of 40 to 85 durometers, the forward end of the inner section being contained in a plane perpendicular to the axis of the outer cylindrical section and recessed with respect to the forward end of the outer section and adapted to be engaged by a forwardly facing portion of the larger male fitting to deform when engaged thereby to form a seal therewith which is maintained by the resistance against axial movement of the adaptor on the fitting as established by the outer section, said inner section having an inside diameter slightly smaller than the outside diameter of the smaller male fitting and adapted to be entered by the smaller male fitting to deform radially outwardly in sealing relationship therewith.

4,484,770

TUBING AND FITTINGS WITH CAST-IN-PLACE LINERS

Glenn L. Sloane, 8825 Colbath, Panorama City, Calif. 91402

Filed Apr. 9, 1982, Ser. No. 366,988
Int. Cl.³ F16L *9/14*
U.S. Cl. 285—55 **9 Claims**



1. In combination:

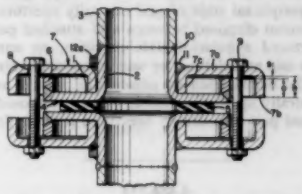
a first tubular conduit comprising a central tubular liner and an outer organic plastic jacket cast upon and surrounding said liner and having an outer wall, said conduit having an end, said outer jacket being recessed from said end to expose the surface of a length of the central liner, and to form an abutment shoulder on the end of said outer jacket; a sleeve member having a central passage adapted to fit over and embrace said outer wall of said outer jacket, an internal step so disposed and arranged as to bear against said abutment shoulder, and a tapered forming surface which enlarges as its extends away from said abutment shoulder, said exposed portion being displaced against the forming surface whereby to form a tapered seal surface; a second tubular conduit having a central tubular liner, an outer organic plastic jacket cast upon and surrounding said last-named tubular liner, said jacket having adjacent said end an abutment surface, a flange on said last-named liner engaging said last-named abutment surface, and a tapered nose on said liner extending beyond said last-named end forming a tapered seal surface that is complementary to said seal surface on said first tubular conduit, whereby said tubular conduits are joined and sealed at the said ends by abutment of said seal surfaces; and compression means engaging said tubular conduits and holding them together.

4,484,771

FLANGE FOR CONNECTING PIPES

Wilhelm Schulz, Krefeld, Fed. Rep. of Germany, assignor to Schulz & Company KG, Krefeld, Fed. Rep. of Germany

Filed Dec. 18, 1981, Ser. No. 332,314
Claims priority, application European Pat. Off., Dec. 18, 1980, 80108019.3
Int. Cl.³ F16L *23/00*
U.S. Cl. 285—138 **13 Claims**



1. A connecting flange comprising

a flange ring having a flanged portion comprising an inner rim and an outer rim with holes through the flange ring between the rims for receiving bolts used to clamp the flange, the flange ring being generally of U-shaped cross-section with the inner rim and the outer rim extending transversely with respect to and in the direction of a sealing surface,

a ring form having a flanged portion and an outer rim extending transversely with respect to and away from the sealing surface, the flanged portion of the flange ring contacting the outer rim of the ring form in a tightened condition of the flange, the outer rim of the ring form being located approximately inwardly of a circle formed by the outer peripheries of the holes in the flange ring, and

means for limiting axial movement of the flange ring relative to said ring form adjacent the inner rim of the flange ring,

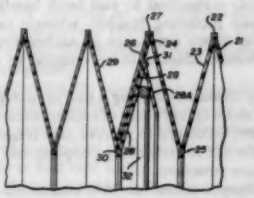
the inner rim of the flange ring having a height which is greater by a predetermined length than the height of the outer rim of the ring form, the predetermined length being selected so that in the tightened condition of the flange, the flanged portion of the flange ring contacts the outer rim of the ring form after the inner rim contacts the flanged portion of the ring form and an elastic re-shaping of the flange ring has taken place.

4,484,772

ROTATABLE BELLOWS-LIKE COVER

Victor H. Ross, Sr., 111 Okinawa Dr., and Victor H. Ross, Jr., Old Apple Orchard - R.D. #3, both of New Castle, Pa. 16105

Filed Mar. 24, 1982, Ser. No. 361,457
Int. Cl.³ F16L *51/02*
U.S. Cl. 285—226 **3 Claims**



1. An improvement in a bellows-like flexible cover for a machine device having a movable joint therein to be covered, said cover comprising a plurality of centrally apertured annular flexible elements, some of which are affixed to one another at their outer peripheral edges and at their inner peripheral edges respectively to form a first bellows section of said cover and some of which are joined to one another at their outer

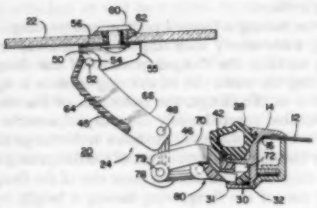
peripheral edges and at their inner peripheral edges respectively to form a second bellows section of said cover, the improvement comprising a rotatable connection between said first and second bellows sections of said cover and comprising the disposition of one of said centrally apertured annular flexible elements on one end of one of said bellows sections of said cover between an attached pair of said centrally apertured annular flexible elements on an adjacent end of the other bellows section of said cover, a secondary centrally apertured annular flexible element attached at its outer peripheral edge to the outer peripheral edge of said centrally apertured annular flexible element disposed between said attached pair of centrally apertured annular flexible elements, an annular ring disposed in said area defined by said secondary centrally apertured annular flexible element adjacent its point of attachment to said centrally apertured flexible element disposed between said attached pair of centrally apertured annular flexible elements.

4,484,773

DETACHABLE LOW-PROFILE LATCH ASSEMBLY FOR RELEASABLY HINGED CLOSURE PANELS

John Lehne, Hacienda Heights, Calif., assignor to LeVan Specialty Co., Inc., City of Industry, Calif.

Filed Sep. 13, 1982, Ser. No. 417,134
Int. Cl.³ E05C *17/32*
U.S. Cl. 292—263 **9 Claims**



1. A detachable latch-handle device for a closure panel having a fixed frame structure, wherein an opening is defined by said frame structure, said device being positioned within said opening and having a low horizontal profile substantially equal to or less than the bottom plane of said frame structure, and wherein said device comprises:

a latch handle secured to said closure panel and interconnecting said fixed frame structure;

a mounting bracket affixed adjacent one edge of said closure panel, one end of said latch handle being adapted to be movably attached thereto;

a retainer means secured to said fixed frame structure;

a demountable anchor means arranged to be releasably secured to said fixed frame structure by said retainer means, and movably connected to said latch handle at the end opposite said mounting bracket, wherein said demountable anchor means comprises an anchor bracket having coupling means adapted to be coupled to said retainer means;

said coupling means comprising a pair of juxtaposed tongue members, and wherein a pair of retainer means are secured in said frame structure to receive said respective tongue members therein for releasably coupling said latch handle to said frame structure;

a releasable keeper means movably connected to said latch handle adjacent said anchor means, whereby said releasable keeper means engages said anchor means so as to lock said coupling means to said retainer means;

wherein said keeper means comprises:

a keeper-body member;

a pair of keeper-arm members pivotally interconnecting said keeper body with said anchor bracket; and

wherein said keeper body includes a pair of keeper-lip members adapted to be received in said retainer means, whereby said anchor bracket is locked in a fixed position with said frame structure;

a pair of toggle-arm members, each being pivotally connected at one end to said latch handle, and at the opposite end to said anchor bracket; and

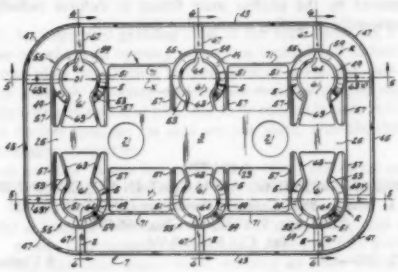
wherein pivot means is provided at each pivotal connection to allow articulate movement of said latch handle, whereby said closure panel can be positioned in a closed or open mode.

4,484,774

BOTTLE CARRIER

James F. Moss, Tulsa, Okla., assignor to Liberty Glass Company, Sapulpa, Okla.

Filed May 10, 1982, Ser. No. 376,676
Int. Cl.³ B65D *71/00*
U.S. Cl. 294—87.2 **6 Claims**



1. A molded plastic bottle carrier for gripping a cluster of filled bottles, each of which has a neck, a finish on the neck at the bottle mouth, and a bottle cap, the bottles in the cluster being arranged in two side-by-side rows with the bottles in each row contiguous with respect to one another and with respect to the bottles in the other row, said carrier comprising:

an elongate handle portion;

a first row of bottle grippers at one side and a second row of bottle grippers at the other side of the handle portion, the grippers of the two rows being laterally aligned;

a loop of generally rectangular shape below the handle portion and the grippers, adapted to surround the bottles in the cluster for holding them in close confinement, said loop having sides and ends;

each gripper comprising a split collar for gripping the neck of a bottle under the bottle finish;

said collars being spaced on centers corresponding to the spacing of the vertical axes of the bottles in the cluster;

a first pair of loop-supporting struts, one at each end of the carrier, extending down from the collars at the ends of the first row generally in the central vertical plane of the first row;

a second pair of loop-supporting struts, one at each end of the carrier, extending down from the collars at the ends of the second row generally in the central vertical plane of the second row;

each strut being integrally joined at its upper end to the respective collar at the end of the respective row and angled outward and downward therefrom to an integral juncture with the respective end of the loop,

the upper ends of the struts of each pair being spaced one from the other a distance closely corresponding to the distance measured in the central vertical plane of a row of bottles from the point on the periphery of the top of the cap of the bottle at one end of the row to the point on the periphery of the top of the cap of the bottle at the other end of the row,

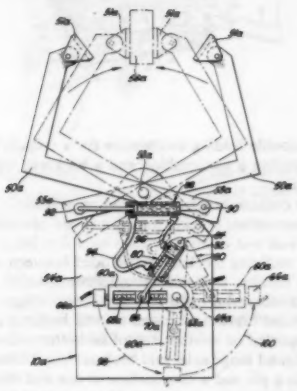
whereby when the carrier is placed on a cluster of bottles the struts are engageable with the bottles for guiding the carrier down to a position wherein the carrier is centered endwise with respect to the cluster for being pushed down on the cluster, without breakage of the carrier, for engagement of each split collar with the neck of a bottle under the bottle finish.

4,484,775

ADJUSTABLE SMOOTH ACTION LINKAGE GRIPPER MECHANISM

George E. Norkus, Macomb County, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 23, 1982, Ser. No. 410,214
Int. Cl.³ B25J *15/00*
U.S. Cl. 294—88 9 Claims



1. In a mechanism that comprises movable work-engaging arm means having a variable length stroke from a fixed start position to a variable final end position: the improvement comprising a power mechanism for operating the work-engaging arm means between its start position and its end position, said power mechanism comprising a lever having a swing axis, motor means for moving said lever through a predetermined arc around the swing axis, and a hydraulic cylinder with a piston disposed therein, said piston having a rod projecting from said cylinder, said rod having a first pivotal connection with the lever so that movement of the lever through its predetermined arc causes the piston to move within the cylinder which enables the hydraulic cylinder to effect motion of the work-engaging arm means from its start position to its end position and said pivotal connection being adjustable along the lever to positions spaced different distances from the lever swing axis, to thus vary the stroke distance traveled by the piston within the cylinder and the associated stroke distance traveled by the work-engaging arm means.

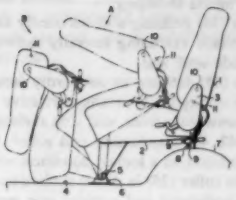
4,484,776

AUTOMOBILE SEAT

Hiroyuki Gokimoto, and Isao Kiyomitsu, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Japan

Filed Aug. 20, 1982, Ser. No. 409,926
Claims priority, application Japan, Aug. 26, 1981, 56-1338719; Sep. 1, 1981, 56-137460; Sep. 4, 1981, 56-140062
Int. Cl.³ B60N *1/02*
U.S. Cl. 296—65 R 27 Claims

1. An automobile seat comprising a seat bottom rotatable around a transverse axis approximately parallel to a floor up to a position where the rear portion of the seat bottom is free from the floor, a seat back mounted on said seat bottom so that the seat back can be inclined forwards, a seat bottom lock for releasably locking the rear portion of said seat bottom to said floor so as to allow the forward rotation of said set bottom around said transverse axis when unlocked, a seat back lock for



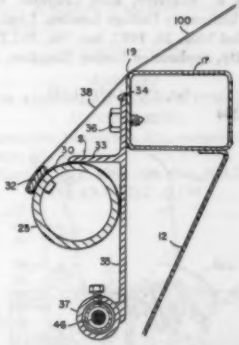
releasably locking said seat back to said seat bottom, and a lock releasing and linking mechanism for linking the forward inclination of said seat back and the rotation of said seat bottom to each other so as to conduct both seat back forward inclination and seat bottom rotation by a single operation.

4,484,777

APPARATUS FOR TENSIONING A COVER SHEET OVER AN OPEN-TOPPED RECTANGULAR BOX OR BUILDING

Walter C. Michel, P.O. Box 86, Humboldt, Saskatchewan, Canada S0K 2A0

Filed Jun. 16, 1982, Ser. No. 388,944
Claims priority, application Canada, Jun. 18, 1981, 380064
Int. Cl.³ B60J *11/00*
U.S. Cl. 296—98 15 Claims



3. Apparatus for covering an open-topped rectangular box (10) having opposed pairs of vertical side (11, 12) and end (13, 14) walls, and means (23) defining a roof-shaping framework for said box, comprising

(a) a rectangular flexible cover sheet dimensioned to cover the box opening, said cover sheet having a width dimension that is greater than the width dimension of the box, one of the longer edges of said cover sheet being secured to one (11) of said side walls;

(b) a roller (25) connected with the other longer edge of said cover sheet;

(c) means (42, 41) for rotating said roller in a direction to wind said cover onto the roller and thereby uncover the box opening, said rotating means being operable in the opposite direction to unwind the cover sheet from the roller and to spread the cover sheet over the roof framework, said roller, when fully unwound, hanging from the adjacent marginal portion (38) of the cover sheet down-

wardly in spaced relation below the upper edge (19) of, and adjacent the external surface of, the other side wall (12);

(d) stop means (S) arranged on the external surface of said other side wall (12) for locking said roller in a position in which the cover member extends over the box opening, said stop means including:

(1) means (33) defining a downwardly facing horizontal stop surface extending laterally outwardly from said other side wall; and

(2) means (35) defining an outwardly facing vertical stop surface orthogonally arranged relative to, and extending downwardly from, said stop surface; and

(e) means (42, 45) maintaining said roller, when in an unrolled condition, in a locked condition with the bare surface of the roller (25) in direct surface-to-surface contact with the horizontal and vertical stop surfaces, whereby the marginal portion (38) of the cover sheet contacts only the upper edge of the side wall and the roller to eliminate chafing or wear-associated frictional clamping of the cover sheet, said stop means being so vertically spaced from said upper longitudinal edge (19) of said other wall that said cover sheet is maintained taut when said roller is in the locked condition.

4,484,778

SHAPEABLE MATRIX, AND A CHAIR USING A MATRIX

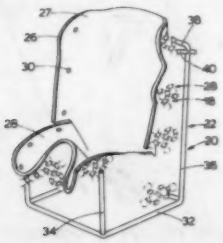
Steven J. Cousins, Ashtead; Keith N. Jones, Carshalton Beeches, and Kenneth E. Ackerley, East Croydon, all of England, assignors to University College London, London, England

Filed Mar. 26, 1982, Ser. No. 362,272

Claims priority, application United Kingdom, Mar. 31, 1981, 8109998

Int. Cl.³ A47C *3/00*

U.S. Cl. 297—284 7 Claims



7. A chair which comprises a support frame; and a shapeable matrix mounted on the frame, the shapeable matrix comprising a plurality of first members each of which has a plurality of projections located on the periphery thereof, and a plurality of second members each of which has a plurality of recesses located on the periphery thereof, each recess being adapted to receive a respective one of the projections of an adjacent first member, and means provided on each of the second members for releasably clamping the projections of the first members in recesses of the second members, the clamping being operative in a released condition to permit each projection and its associated recess to act as a universal joint and thereby to permit alteration in the relative orientation of adjacent members and being operative in a clamped condition to prevent such alteration.

4,484,779

DOUBLE FOLDING MECHANISM FOR VEHICLE SEATS

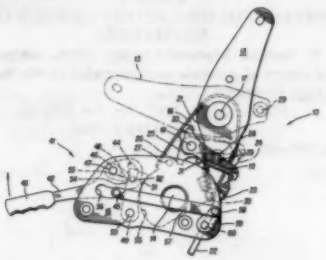
Saburo Suzuki, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 14, 1982, Ser. No. 398,409

Claims priority, application Japan, Jul. 15, 1981, 56-104969[U]

Int. Cl.³ B60N *1/04*

U.S. Cl. 297—326 3 Claims



1. A double folding mechanism for a vehicle seat having a seat including a seat cushion and a backrest, said mechanism comprising:

a seat cushion bracket provided on said seat cushion;

an intermediate bracket having one end pivotably supported on said seat cushion bracket by a first hinge axle;

a seat reclining mechanism provided between said seat cushion bracket and said intermediate bracket for adjusting said backrest around said first hinge axle;

a backrest bracket provided on said backrest and pivotably supported on another end of said intermediate bracket by a second hinge axle, said backrest bracket being provided with a pin and a cam surface at one end thereof;

a latch having one end pivotably supported on said intermediate bracket and provided with a recessed portion engageable with said pin of said backrest bracket for preventing said backrest bracket from rotation around said second hinge axle;

said latch being provided with a hooked portion engageable with a pin formed on said seat cushion bracket so that said pin of said backrest bracket is disengaged from said recessed portion of said latch when said intermediate bracket is rotated around said first hinge axle by the operation of said seat reclining mechanism;

a release lever pivotably supported on said intermediate bracket and provided at one end with a flange engageable with said cam surface of said backrest bracket; and

cable means having one end operatively connected to another end of said release lever, said cable means having another end operatively connected to means for providing engagement and disengagement between said seat cushion and a vehicle floor.

4,484,780

LEG REST HANGER

Chadwick B. Thompson, Auckland, New Zealand, assignor to W. A. Thompson & Company Limited, New Zealand

Filed Oct. 14, 1981, Ser. No. 311,237

Int. Cl.³ A47C *7/52*

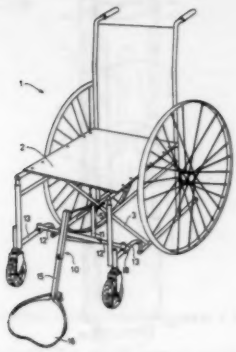
U.S. Cl. 297—433 10 Claims

1. A leg rest hanger for use with a wheelchair having cross-bracing members under the wheelchair seat, a connector which comprises a bolt having a projecting head, for joining the cross-bracing members and supporting the leg rest hanger, and side frame members under the seat, said leg rest hanger comprising:

side arms for extending to said side frame members to fix the

lateral positon of the leg rest hanger with respect to the wheelchair;

a foot rest supported and fixed laterally by said leg rest hanger upon which the lower limbs of an occupant of the wheelchair may be rested; and



an aperture in said hanger for receiving the head of said bolt to secure the hanger to the connector and allow removal of the hanger from the wheelchair.

4,484,781

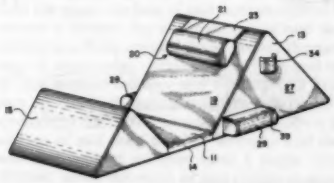
FLOTATION CHAIR

Kelsey L. Phelps, 880 W. Riverdale Rd., Ogden, Utah 84405

Filed Apr. 26, 1982, Ser. No. 371,975

Int. Cl.³ A47C 7/02

U.S. Cl. 297—452 **8 Claims**



1. A flotation chair for supporting the user in a reclining position, said chair including a covering of durable pliable material forming an enclosure with three compartments formed therein, each compartment having an access opening and closure means for selectively opening and closing each access opening, three separate cushions each of which is removably received within a compartment, two of said cushions being wedge-shaped and the third being rectangular, said two cushions being spaced apart and positioned on either side of the third cushion, said covering closely surrounding and supporting the cushions to maintain their shape and resist distortion and deformation thereof.

4,484,782

CUSTOMIZED CHAIR AND METHOD OF MANUFACTURING

Jonathan A. Larson, 570 Dayton Ave., St. Paul, Minn. 55102

Filed Jan. 19, 1982, Ser. No. 340,590

Int. Cl.³ A47C 7/02

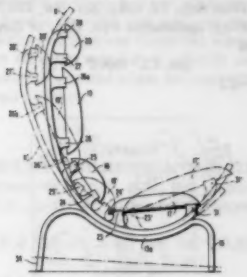
U.S. Cl. 297—458 **19 Claims**

1. A standardized chair configuration that enables a customized chair to be manufactured to a unique set of measurements, said chair comprising:

(a) at least one universal one piece C-frame member, said C-frame extending under the chair and providing a support frame for the chair,

(b) a floor mount for supporting said C-frame member on a floor,

(c) a plurality of standardized individual upholstered support member, said members providing at least an upholstered seat support, an upholstered lumbar support, an upholstered thoracic support, and an upholstered cervical support for said chair,



(d) at least one customized support block mounted between each of said upholstered support members and said universal C-members to provide unique individualized placement for each of the upholstered support members, said blocks providing for radial, circumferential and angular positioning of the support members,

whereby a standardized chair may be customized to a unique set of measurements by said blocks before they are placed between said upholstered support members and said universal C-member.

4,484,783

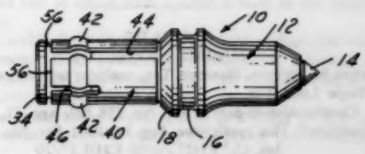
RETAINER AND WEAR SLEEVE FOR ROTATING MINING BITS

Kenneth C. Emmerich, Lexington, Ky., assignor to Fansteel Inc., North Chicago, Ill.

Filed Jul. 22, 1982, Ser. No. 400,733

Int. Cl.³ E21C 25/38

U.S. Cl. 299—86 **10 Claims**



1. In combination, a mining tool bit element, a bit support element, one of said elements having a retention shank and the other of said elements having a shank receiving bore, and a retention ring mecanically associating the bit element and the bit support element in telescoping relation for rotation which comprises:

(a) a retention shank on one end of said elements having axially opposed abutment radial shoulders, a fulcrum land axially adjacent one of said shoulders of lesser diameter than the outer diameter of said shoulders, and an annular recess formed adjacent the other of said shoulders having a diameter less than that of said fulcrum land,

(b) a retention ring of resilient material mounted between said shoulders on said retention shank around said fulcrum land and said recess, said ring having a plurality of resil-

ient fingers at the end opposite said fulcrum land radially movable into said recess upon insertion or removal, and

(c) means on said fingers to extend radially outward of said ring to engage the interior wall of the other of said elements.

4,484,784

DUAL-CIRCUIT BRAKE APPARATUS

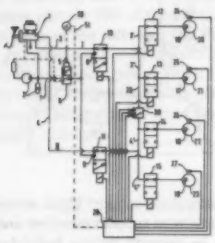
Heinz Leiber, Oberriexingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 23, 1982, Ser. No. 410,799

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1981, 3137200

Int. Cl.³ B60T *17/18*

U.S. Cl. 303—92 **9 Claims**



1. A dual-circuit brake system having a three-position pressure sensor in said system for monitoring dual brake pressures which occur at various times in said dual brake circuits, said pressure sensor being equipped with a double piston formed with oppositely disposed axially aligned oblique faces which is subjected to the pressure of said dual brake pressures and with an electrical switch disposed between and actuated via said oblique faces of said double piston, characterized in that said dual-circuit brake system is combined with an anti-skid braking apparatus equipped with magnetic valves and that said pressure sensor is disposed in said brake circuits between said magnetic valves of the anti-skid braking apparatus and wheel-cylinders of said braking system, said anti-skid braking apparatus further including an electronic control unit, said electronic control unit is provided with an evaluation circuit for signals of said pressure sensor as well as at least one pre-programmed test cycle for the purpose of automatically running a test.

4,484,785

TUBING PROTECTOR

Joshua M. Jackson, Houston, Tex., assignor to Sperry-Sun, Inc., Sugar Land, Tex.

Continuation-in-part of Ser. No. 258,209, Apr. 27, 1981, abandoned. This application Aug. 16, 1982, Ser. No. 408,625

Int. Cl.³ F16C *29/00*; E21B *17/10*

U.S. Cl. 308—4 A **27 Claims**

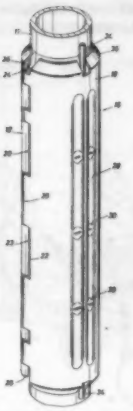
1. An apparatus for protecting one or more small diameter tubular members secured along the outside of a string of tubular pipe sections, comprising:

a plurality of separable sleeve members capable of being arranged and locked to form a sleeve assembly about a joint between pipe sections, said joint having a diameter greater than that of said pipe sections;

one or more means for receiving and holding said small diameter tubular members in a fixed relation to said pipe string formed on the inner surface of at least one sleeve member; and

hinge means on each of said separable sleeve members and pin means insertable in said hinge means for holding said members in assembly,

wherein said hinge means and said receiving and holding means are arranged to project radially inwardly from said sleeve members to provide contact points for biasing



against said joint when said sleeve members are arranged in assembly about said joint.

4,484,786

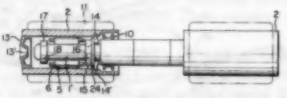
TOP ROLLER

Takeshi Suzuki, 19, Hacchodori, 4-chome, Toyohashi-shi, Aichi, Japan

Continuation of Ser. No. 359,764, Mar. 19, 1982, abandoned, which is a continuation of Ser. No. 129,661, Mar. 12, 1980, abandoned. This application Jan. 6, 1984, Ser. No. 568,522

Int. Cl.³ F16C *19/22, 33/34, 21/00*

U.S. Cl. 384—537 **3 Claims**



1. A top roller, comprising:

an arbor having a cylindrical rotary part of relatively small diameter and a coaxial cylindrical holding part of relatively large diameter, with a step at the junction between said parts;

a cylindrical shell rotatably mounted on said rotary part of said arbor by means of bearing means;

an outer bearing means synthetic resin retaining ring axially disposed between said bearing means and an end of said rotary part of said arbor;

an inner bearing means retaining ring axially disposed between said bearing means and said step;

an annular synthetic resin stop ring coaxial with and surrounding said rotary part of said arbor, said stop ring having a generally cylindrical periphery and being axially disposed between said inner bearing means retaining ring and said step, the periphery of said stop ring engaging a groove in an inner wall of said cylindrical shell so that said stop ring is secured to said shell for axial movement therewith; and

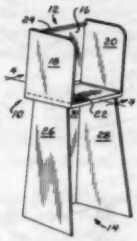
a metal ring coaxial with and surrounding said rotary part of said arbor and axially disposed between said stop ring and said inner bearing means retaining ring to reduce friction between said stop ring and said inner bearing means retaining ring, said stop ring restraining axial movement of said cylindrical shell with respect to said arbor.

4,484,787

PORTABLE, FOLDABLE VOTING BOOTH/LECTERN

Richard J. Stephens, St. Charles, Ill., assignor to Election Data Corporation, St. Charles, Ill.

Filed Apr. 29, 1982, Ser. No. 372,977
Int. Cl.³ A47B 43/00
U.S. Cl. 312—239 1 Claim



1. A combination voting booth/speaker's lectern comprising:

a lower, generally flat, planar support member foldable into three flexible coupled sections including a back section and two side sections oriented generally vertically in a nonplanar configuration and including an upper edge portion and a lower edge portion, with said back section including an extension portion foldably coupled to said upper edge of said back section; and

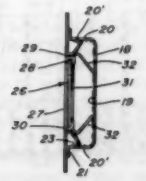
an upper, planar shelf member having upper and lower surfaces and foldable into a plurality of flexibly coupled sections including a generally horizontal bottom section and a plurality of sidewalls foldable into a first generally upright position for substantially enclosing the upper surface of said bottom section for use as a voting booth or a second generally horizontal position immediately adjacent the upper surface of said bottom section for use as a speaker's lectern, the lower surface of said shelf member including a three coupled linear groove therein for receiving the upper edge portion of said back and side sections of said support member and wherein said extension portion on said back section is fixedly positioned within and coupled to one of said coupled linear grooves in the lower surface of said shelf member whereby said shelf member and said support member form a single structural unit foldable along the union of said extension portion and the upper edge of said back section.

4,484,788

FLUSH PULL DRAWER HANDLE FOR CABINET

Louis L'Homme, St-Jean; Pierre Pontbriand, Montreal, and Georges Guichard, St-Michel, all of Canada, assignors to Artopex Inc., Laval, Canada

Filed Sep. 8, 1982, Ser. No. 415,914
Int. Cl.³ A47B 95/02
U.S. Cl. 312—320 10 Claims



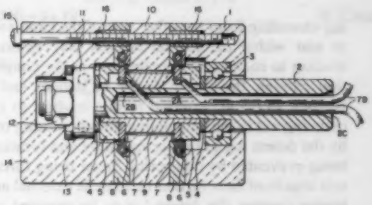
1. A flush drawer handle for a drawer having at least a flat rigid frontal wall portion about said handle, said handle comprising a handle slot having opposed horizontal edges and end edges, flange means at least in opposed ones of said horizontal edges and formed integral with said frontal wall portion and extending inwardly of said frontal wall portion, a rear wall member having a rear wall portion and side wall portions extending transverse to a common side of said rear wall portion, said side wall portions having retention means for releasable securement with said flange means rearwardly of said frontal wall portion and further having an integrally formed abutment flange at a free end edge thereof extending parallel to said rear wall portion thereof, said rear wall member surrounding the entire handle slot with said rear wall portion disposed parallel to said slot and recessed therefrom whereby to receive an information carrying member in snap-fit engagement between said parallel horizontal edges and said rear wall portion of said rear wall member.

4,484,789

MERCURY SLIP RINGS AND METHOD

Frank W. Leitner, Greenville, S.C., and James B. Bamberg, Charlotte, N.C., assignors to Motek Laboratories Ltd., Greenville, S.C.

Filed May 14, 1980, Ser. No. 149,923
Int. Cl.³ H01R 39/30
U.S. Cl. 339—5 L 19 Claims



1. An input-output device for rotating circuitry, comprising in combination a body;

a fluid electrically conductive medium within said body;

rotating means at least partly within said medium;

said body comprising stationary body means in contact with said medium for external connection;

said medium electrically connecting said rotating means to said stationary means;

a plurality of different means for sealing said medium in liquid and in vapor state against release to the environment;

means within the body for confining said medium and means accessible from outside of the body for releasing said medium into said contact with the rotating means and stationary body means; and,

said releasing being accomplished at a point in time only immediately prior to placing said device into utilization.

4,484,790

ANTI-DECOUPLING DEVICE FOR AN ELECTRICAL CONNECTOR

Alan L. Schildkraut, Sidney, and Dee A. Werth, Bainbridge, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 30, 1983, Ser. No. 480,190
Int. Cl.³ H01R 13/623
U.S. Cl. 339—89 M 13 Claims

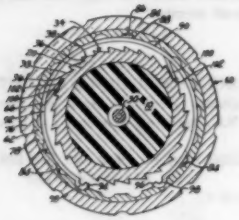
1. An anti-decoupling device for an electrical connector assembly, the connector assembly comprising generally cylindrical first and second shells (10, 40) and a coupling nut (60) for interconnecting the shells, said coupling nut being rotatably mounted to said first shell and comprising a cylindrical coupling sleeve (62) connectable with said second shell (40), said anti-decoupling device for retarding unwanted uncoupling

rotation of the coupling nut relative to said first shell, said anti-decoupling device characterized by:

a plurality of first detents (34) arranged annularly on said first shell (10) with each said detent having an abutment face (36);

a plurality of second detents (84) arranged annularly on the coupling sleeve (62); and

a detent spring (90) interposed between said first and second detents, the detent spring comprising an arcuate band (92) including a detent lug (98) and a resiliently deflectable spring finger (100), said spring finger extending from one side of the band and having a deflectable end (102) adapted to engage the abutment faces (36) and said detent



lug extending from the other side of the band and adapted to seat within the second detents (84), external torque tending to rotate said coupling nut in the coupling direction causing the spring finger to deflect and coupling rotation to occur, external torque tending to rotate said coupling nut in the uncoupling direction being transmitted by the detent lug to the spring finger and rotation initially being prevented by said spring finger being forced against said abutment face, further increase in external uncoupling torque causing the detent lug to be cammed outwardly from engagement with the second detent, disengagement of the detent lug thereby allowing uncoupling rotation of the coupling nut.

4,484,791

CONNECTOR FOR MULTICONDUCTOR FLAT INSULATED CABLE

Hardie B. Johnson, Lewisberry, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 3, 1980, Ser. No. 165,637
Int. Cl.³ H01R *13/39*
U.S. Cl. 339—99 R **2 Claims**

1. An electrical connector for a standard insulated flat cable having a plurality of insulated conductors disposed in coplanar side-by-side relation with conductor center spacing of about 1.27 mm, said connector comprising

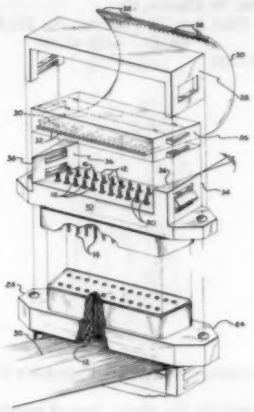
a rigid base of insulating material,

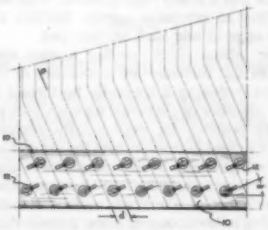
a pair of opposed side walls integrally joined to said base, the opposed surfaces thereof disposed at the same angle relative to the transverse axis of said base,

a plurality of terminals arrayed in staggered parallel rows between the opposed walls, each of said terminals comprising an elongated pin mounted in said base and extending perpendicularly therethrough in parallel spaced relation to each other,

a pair of tines integrally joined to one end of said pin, said tines being in parallel spaced relation to each other disposed in a common plane and defining a slot therebetween, and

said common planes being angularly oriented to an acute angle relative to the transverse axis of said base with the slot of each tine in the common plane separated by about





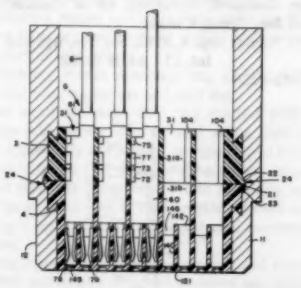
1.37 mm and each slot accepting a conductor from said standard insulated flat cable.

4,484,792

MODULAR ELECTRICAL CONNECTOR SYSTEM

John N. Tengler, Chardon, and James C. Pilny, Painesville, both of Ohio, assignors to Chabin Corporation, Chico, Calif.

Filed Dec. 30, 1981, Ser. No. 335,656
Int. Cl.³ H01R *13/502*
U.S. Cl. 339—143 R **49 Claims**



1. A modular connector system, comprising plural terminator means for terminating respective signal conductors at respective contacts; plural connector blocks, each having plural

cell means for receiving and holding respective terminator means with said contacts thereof aligned for connection with further contacts inserted to engage the same; frame means for holding said connector blocks securely in relative position to each other; and a dovetail connecting means for connecting said connector blocks with said frame means; said dovetail connecting means including one portion of a dovetail prism-shape member on one connector block and another portion of a dovetail prism-shape member on another connector block, said frame means having a dovetail slot, and said dovetail prism-shape members being cooperative with each other and with said slot thereby to connect the same securely in said frame means.

4,484,793

SWITCHING DEVICE BETWEEN OPTICAL FIBERS

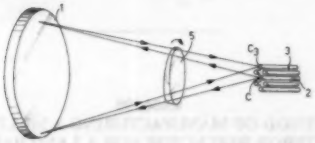
Jean-Pierre Laude, Saclas, France, assignor to Instruments S. A., Paris, France

Filed May 24, 1982, Ser. No. 381,664

Claims priority, application France, Jun. 5, 1981, 81 11148

Int. Cl.³ G02B 5/172

U.S. Cl. 350—96.20 **5 Claims**



1. A switching device between optical fibers for ensuring continuity of light transmission between the end of a first fiber (2) and the end of any of a group of other fibers (3), wherein the end of said first fiber (2) is placed at the center of radius of curvature (C) of a spherical mirror (1) while the ends of said other fibers (3) are arranged symmetrically relative to said first fiber, in the plane perpendicular to the axis (X) of said mirror and passing through said center (C), said device comprising, on the optical path between said first fiber (2) and said other fibers (3) and said mirror (1), at least one optically deviating member (5), operating in transmission, provided with means (17, 18) for rotating it on itself about the axis of said mirror.

4,484,794

OPTICAL STAR COUPLER AND THE METHOD OF MAKING

Hans-Hermann Witte, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 2, 1981, Ser. No. 298,593

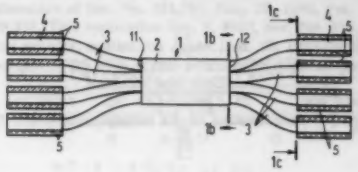
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1980, 3036044

The portion of the term of this patent subsequent to May 22, 2001, has been disclaimed.

Int. Cl.³ G02B 5/172

U.S. Cl. 350—96.16 **8 Claims**

1. An optical star coupler for use in an optical system with multimode optical fibers for interconnecting two groups of system fibers, said optical star coupler comprising a mixing element; two groups of optical fiber elements; and means for positioning the mixing element and said groups of fiber elements in the same plane, said mixing element being a planar waveguide having an input end and an output end which ends are interconnected to the groups of fiber elements with a packing density of each group of the fiber elements at the input and output ends being as high as possible, said planar waveguide having a thickness equal to the diameter of each of the fiber elements, the diameter of each of the fiber elements being equal to the core diameter of the system fiber to which it is connected and all of the fiber elements being of one type selected



from a group consisting of gradient fibers and step profile fibers.

4,484,795

DELAY EQUALIZATION FOR SINGLE MODE OPTICAL FIBERS

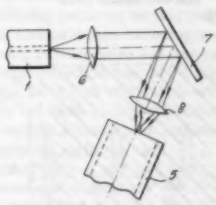
Kevin C. Byron, Bishop's Stortford, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jul. 1, 1982, Ser. No. 394,250

Claims priority, application United Kingdom, Jul. 16, 1981, 8121876

Int. Cl.³ G02B 5/172

U.S. Cl. 350—96.19 **10 Claims**



6. An arrangement for equalizing wavelength dependent delay in single mode optical fibers comprising:

a dispersion element to transmit a beam of light having varying wavelength emergent from a single mode optical fiber at an angle dependent on said wavelength; and

a predetermined length of a multimode optical fiber in coupled relationship with said element into which said transmitted beam of light is launched to provide at an output thereof a beam of light equivalent to said beam of light emergent from said single mode fiber with said delay thereof equalized.

4,484,796

OPTICAL FIBER CONNECTOR

Hidemi Sato; Aizo Kaneda, both of Yokohama; Hitoshi Yokono, Katsuta; Atsuyoshi Ohashi, Chigasaki; Kiyohide Miyake, Kodaira; Toshiro Kodama, Hachioji, and Kiichi Suzuki, Yokosuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 10, 1981, Ser. No. 319,986

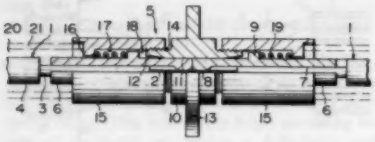
Claims priority, application Japan, Nov. 11, 1980, 55-157583; May 29, 1981, 56-81012

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.21 **9 Claims**

1. An optical fiber connector comprising a pair of plug pins, a sleeve having a forward end of each said plug pin inserted therein to bring the end portions of the plug pins into abutting engagment with each other, and a pair of cap nuts for securing said plug pins to said sleeve, said plug pins, sleeve and cap nuts being formed of synthetic resinous material and each of said plug pins being attached to an end of a respective optical fiber

by means of an adhesive agent, each of said plug pins having an orifice, formed by a core pin having a diameter 1–2 μm larger than the outer diameter of the optical fiber, and being located in the center of a core for forming a forward end face of the



plug pin, wherein the adhesive agent comprises an epoxy resin base adhesive agent of below 20 poise in viscosity added as a filler with 40–60 wt% of alumina or aluminum hydroxide in particle form of mean particle size which is 50–70% of the clearance between an orifice of th plug and the optical fiber.

4,484,797

DIFFRACTIVE SUBTRACTIVE COLOR FILTER RESPONSIVE TO ANGLE OF INCIDENCE OF POLYCHROMATIC ILLUMINATING LIGHT

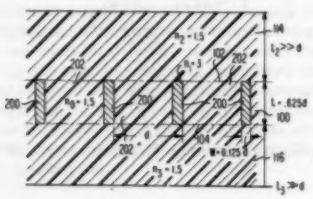
Karl H. Knop, Zurich, and Rudolf H. Morf, Winterthur, both of Switzerland, assignors to RCA Corporation, New York, N.Y.

Filed Jun. 11, 1982, Ser. No. 387,614

Claims priority, application United Kingdom, Jul. 20, 1981, 8122335; Sep. 17, 1981, 8128194

Int. Cl.³ G02B *5/18*

U.S. Cl. 350—162.19 **33 Claims**



1. A diffractive subtractive color filter responsive to polychromatic illuminating light having a given wavelength spectrum incident thereon for deriving reflection spectra which vary as a function of the angle of incidence α of said illuminating light and in which for each angle of incidence the reflection spectrum comprises separate portions that are polarized respectively parallel to and perpendicular to a given direction, and for also deriving transmission spectra which are substantially the complement of said reflection spectra; said filter comprising:

a first optical medium having a thickness t between two opposite faces thereof, said first optical medium having a varying index-of-refraction which divides said first optical medium into juxtaposed periodic diffraction elements of a diffractive structure having a period d which extends in a direction substantially parallel to said faces and perpendicular to said given direction, so that each one of said diffraction elements extends along a direction substantially parallel to said faces and parallel to said given direction,

the spatial distribution of said varying index-of-refraction within the volume of each diffraction element dividing that diffraction element into a plurality of separate three-dimensional regions of certain-valued relatively higher and relatively lower indices-of-refraction, each of said regions having a specified size and shape, whereby the entire volume of each diffraction element has an average index-of-refraction $\bar{n}$,

said average index-of-refraction $\bar{n}$ being larger than the index-of-refraction n_2 of a second optical medium contacting one of said opposite faces and also larger than the index-of-refraction n_3 of a third optical medium contacting the other of said opposite faces, and

at all free space wavelengths λ within a sub-interval of said illuminating wavelength spectrum extending from a minimum wavelength λ_1 up to a maximum wavelength λ_2, the following relationships are true

$$\bar{n} > \max(n_2, n_3) \quad (1)$$

$$d \max(n_2, n_3) < \lambda_2 \quad (2)$$

$$d(\bar{n} + 1) > \lambda_1 \quad (3)$$

$$4\bar{n}t \geq \lambda_1 \quad (4)$$

where $\max(n_2, n_3)$ is generally the larger of n_2 and n_3, but in the special case where $n_2 = n_3$, is n_2 or n_3,

whereby the characteristics of each of said spectra depends on (1) the angle of incidence of said illuminating light, (2) the specified size and shape of each of said regions of said certain-valued relatively higher and relatively lower indices-of-refraction, so that the value of $\bar{n}$ is determined, and (3) the respective physical values of d and t.

4,484,798

METHOD OF MANUFACTURING A MULTIPLE MIRROR REFLECTOR FOR A LAND BASED TELESCOPE

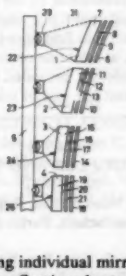
Harry Howden, Smallfield, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 23, 1982, Ser. No. 371,092

Claims priority, application United Kingdom, May 1, 1981, 8113525

Int. Cl.³ G02B *5/10*

U.S. Cl. 350—601 **7 Claims**



1. A method of making individual mirrors for use in a multiple mirror reflector for reflecting short-wave electromagnetic radiation, said method comprising the steps of:

a. forming a substrate having a surface which approximately conforms to a predefined profile for the respective mirror;

b. depositing a reflective metallic layer on a polished molding tool surface which accurately conforms to the predefined profile for the respective mirror;

c. positioning the surface of the substrate and the reflective metallic layer in close proximity to each other, leaving sufficient space between said surface and said layer so they do not touch;

d. filling the space with an adhesive;

e. allowing the adhesive to cure sufficiently to bond the reflective metallic layer to the substrate; and

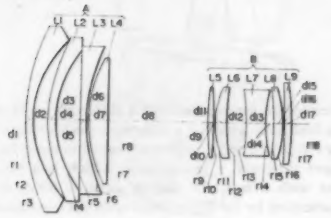
f. breaking the reflective metallic layer free from the molding tool surface and separating the substrate, with said layer bonded thereto, from said tool.

4,484,799

WIDE ANGLE ZOOM LENS

Yoshikazu Doi; Yutaka Sakai, and Kazunori Ohno, all of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitenma, Japan

Continuation-in-part of Ser. No. 71,048, Aug. 30, 1979, abandoned. This application Dec. 14, 1981, Ser. No. 330,781
Claims priority, application Japan, Sep. 1, 1978, 53-107737
Int. Cl.³ G02B *13/04, 15/14*
U.S. Cl. 350—426 2 Claims



1. A wide angle zoom lens consisting of a front lens group comprising at least one negative meniscus lens having its convex surface directed toward the object side, a negative lens with a first surface concave towards the image side and a second surface of larger radius of curvature directed toward the object side and a positive meniscus lens having the surface of larger radius of curvature directed toward the image side and a rear lens group comprising one biconvex lens, a first positive meniscus lens having its surface of larger radius of curvature directed toward the image side, one biconcave lens having the surface of larger radius of curvature directed toward the object side and two positive meniscus lenses with the convex side toward the image in the order mentioned from the object side and adapted to provide variation in magnification by causing the two lens groups to be moved in mutually opposite directions along the optical axis of the lens system, which zoom lens is characterized by fulfilling the following requirements in which the focal length (fW) on the wide angle side is assumed to be 1:

(1) $-2.1<fA<-1.7$
(2) $0.2<d12+d13<0.45$
(3) $-0.1<1/r5<0.1$
(4) $0.9<1/r7<1.3$
(5) $1.2<1/r11<1.6$
(6) $-0.8<1/r13<-0.5$
(7) $\nu d4<30.0$

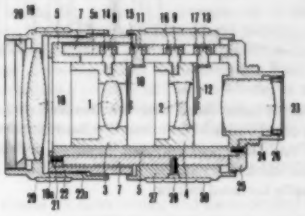
wherein, fA stands for the focal length of the front lens group, r5 for the radius of curvature of the object side surface of the said negative lens of the front lens group, r7 for the radius of curvature of the object side surface of the positive meniscus lens of the front lens group, r11 for the radius of curvature of the object side surface of the first positive meniscus lens of the rear lens group, r13 for the radius of curvature of the object side surface of the biconcave lens of the rear lens group, d12 for the length of the air gap between the first positive meniscus lens of the rear lens group and the biconcave lens of the rear lens group, d13 for the center thickness of the biconcave lens of the rear lens group and $\nu d4$ for the Abbe number of the positive meniscus lens of the front lens group.

4,484,800

CONTROL MECHANISM FOR A ZOOM LENS

Tetsuo Tamura, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 151,757, May 20, 1980, Pat. No. 4,380,378. This application Sep. 9, 1982, Ser. No. 416,221
Claims priority, application Japan, Jun. 13, 1979, 54-74314
The portion of the term of this patent subsequent to Apr. 19, 2000, has been disclaimed.
Int. Cl.³ G02B *7/10*
U.S. Cl. 350—429 2 Claims



1. A mechanism for controlling operation of a zoom lens assembly comprising:

an optical lens system for said assembly;

lens holding means for said optical lens system;

a tubular body having a linear guide;

cam means defining camming surface means,

said camming surface means including a primary camming surface having an orientation and formed as one surface of said camming surface means and a supplementary camming surface having an orientation which is at least approximately the same as said orientation of said primary camming surface formed as a surface opposed to said primary camming surface;

a spring member having one end being fixed to said lens holding means and another end which is free;

engagement means comprising a first and second engagement member, said first engagement member being fixed to said lens holding means and contacting with said primary camming surface, said second engagement member being fixed to said free end of said spring member and contacting with said supplementary camming surface;

said first and second engagement members passing through said linear guide of said tubular body so as to contact with the respective camming surfaces, said spring member applying its spring force in such a direction that said lens holding means follows said primary camming surface through said first engagement member.

4,484,801

PANORAMIC LENS

Arthur Cox, Des Plains, Ill., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 20, 1982, Ser. No. 420,451
Int. Cl.³ G02B *13/06*
U.S. Cl. 350—441 6 Claims

1. An optical system for 360° annular image transfer comprising:

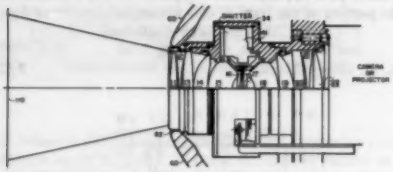
a hyperbolically surfaced mirror having a near and far focal point and an apex at which is located a central aperture;

a plane mirror having its surface perpendicular to the optical axis of said hyperbolically surfaced mirror;

an envelope of optically suitable transparent material having an outer and inner surface generated in symmetry from said near focal point of said hyperbolically surfaced mirror and attached to said hyperbolically surfaced mirror and said plane mirror to hold the same in spaced axial symmetry;

a refractive lens system of negative lens elements flanked by positive lens elements;

said hyperbolically surfaced mirror and said plane mirror and said lens system constituting a total optical system having an entrance pupil; and



said mirrors being faced with the mirrored surfaces toward each other and held in a spaced relationship by said envelope such that said entrance pupil of said total optical system coincides with the near focal point of said hyperbolically surfaced mirror.

4,484,802

OPTICAL READ-OUT LENS SYSTEM FOR OPTICALLY RECORDED DISKS

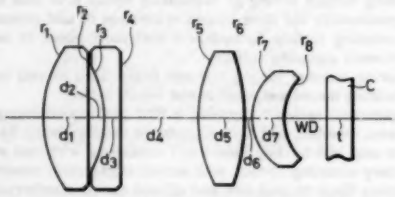
Juro Kikuchi, Hachiooji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 24, 1982, Ser. No. 410,998

Claims priority, application Japan, Sep. 7, 1981, 56-139829

Int. Cl.³ G02B *9/34*

U.S. Cl. 350—469 **7 Claims**



1. An optical read-out lens system for optically recorded disks, comprising

first, second, third and fourth lenses wherein said first lens is a positive lens, said second lens is a negative lens, said third lens is a positive lens and said fourth lens is a positive meniscus lens arranged to be concave toward the disk side,

said optical read-out lens system satisfying the following four conditions:

$$1.0<|f_2|/f_1<1.4 \quad (1)$$

$$0.55<f_4/f_3<0.8 \quad (2)$$

$$0.3<d_4(n_2-1)/f<0.55 \quad (3)$$

$$d_2<0.1f \quad (4)$$

wherein, reference symbol f represents the focal length of the lens system as a whole, reference symbols f_1, f_2, f_3 and f_4 respectively represent focal lengths of the first, second, third and fourth lenses, reference symbol d_2 represents the airspace between the first and second lenses, reference symbol d_4 represents the airspace between the second and third lenses, and reference symbol n_2 represents the refractive index of the second lens.

4,484,803

OBJECTIVE LENS FOR REGENERATING A VIDEO DISC

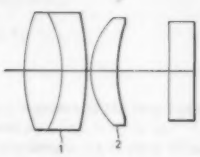
Norikazu Arai, Komae, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Japan

Filed Nov. 22, 1982, Ser. No. 443,238

Claims priority, application Japan, Nov. 20, 1981, 56-185210

Int. Cl.³ G02B *9/06, 21/02*

U.S. Cl. 350—480 **7 Claims**



1. An objective lens for regenerating a video disc, or the like, comprising a first lens, which is a cemented positive lens having a positive lens and a negative lens arranged in named order from an object side, and a second lens which is a positive meniscus lens with a concave surface directed towards the object, characterized by satisfying itself with the conditions as follows:

$$1.1f<r5<1.8f \quad (1)$$

$$-5.2f<(r2/n2-n1)<-3.5f \quad (2)$$

$$0.6f<d1+d4<0.72f \quad (3)$$

where

f: resultant focal length of an overall system

r2: radius of curvature of a cemented surface of a first lens

r5: radius of curvature of a surface on an image side of a second lens

d1: thickness of an optical axis of a first lens

d4: thickness of an optical axis of a second lens

n1: refractive index of the first lens

n2: refractive index of the second lens.

4,484,804

MULTIFOCAL OPHTHALMIC LENSES

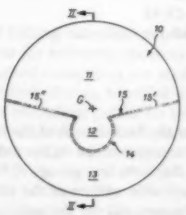
Bernard Mignen, St. Maur-des-Fossés, France, assignor to Essilor International Cie Generale d'Optique, Creteil, France

Filed Jun. 30, 1981, Ser. No. 279,185

Claims priority, application France, Jul. 9, 1980, 80 15246

Int. Cl.³ G02C *7/06*

U.S. Cl. 351—168 **18 Claims**



1. A bifocal opthalmic lens of a kind having a convex front surface which includes an upper part for distant vision having a first spherical surface and a lower part for reading having a second spherical surface, each of said first and second spherical surfaces each having a radius, the radius of said first spherical surface being greater than the radius of said second spherical surface, said first and second spherical surfaces having a junc-

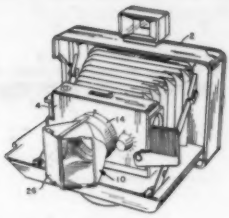
tion and a common tangent at said junction along at least one meridian, said second spherical surface extending away from said junction of said first and second spherical surfaces into a surface of revolution, and junctions between said surface of revolution and said first and second spherical surfaces defined by ledgeless intersections.

4,484,805

PHOTO SPLITTING DEVICE

John Gizzio, 761 Sproul Rd., Springfield, Pa. 19064

Filed Jun. 15, 1983, Ser. No. 504,669
Int. Cl.³ G03B *11/00*
U.S. Cl. 354—122 8 Claims



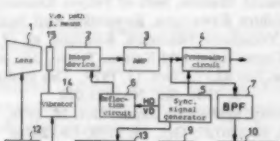
1. A device adapted to fit over the lens mounting ring of a camera and enable two exposures to be made on film normally available for a single exposure, said device comprising a ring section (**12**) designed to fit over the lens mounting ring of a camera, said ring section merging with a section (**18**) having an outer terminal end divided into two angularly disposed planes (**20***a* and **20***b*) normal to the horizontal centerline of the device forming upper and lower flange portions (**22***a* and **22***b*), means in the outermost apex of said flange portions for mounting a light-blocking plate adapted to move from one side of said angularly disposed planes to the other, plate handles (**30***a* and **30***b*) on said plate which interlock with recesses (**32***a* and **32***b*) on the upper and lower portions of said lower flange portions (**22***a* and **22***b*) and a sighting line (**34***a*) on the upper and lower faces of the device.

4,484,806

AUTOMATIC FOCUSSING APPARATUS

Masami Onishi, Kyoto; Yoshinori Kitamura, Katano, and Shoji Nishikawa, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 25, 1983, Ser. No. 488,605
Claims priority, application Japan, Apr. 28, 1982, 57-72107; Apr. 28, 1982, 57-72108; Apr. 28, 1982, 57-72109; Jun. 9, 1982, 57-99651; Jan. 20, 1983, 58-8430
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—404 11 Claims



1. An automatic focussing apparatus having an image pick-up device, a lens and an associated focus setting device, said apparatus comprising:

focus modulating means for cyclically modulating a focus setting on an imaging receiving surface of said image pick-up device,

first driving means for driving said focus modulating means in response to a signal of a given frequency which is 1/n as large as a frequency of a vertical synchronization signal of a standard television signal, where n is an integer larger than 2,

a plurality of band-pass filters having different center frequencies and different reference levels from one another, said plurality of band-pass filters filtering a video signal derived from said image pick-up device,

detecting means for detecting a component of said given frequency from an output of one of said plurality of band-pass filters by means of an envelope detection method,

synchronous detecting means for obtaining a focus control signal including a polarity and an amplitude, by means of a synchronous detection method utilizing said given frequency component and said given frequency,

second driving means for controlling said focus setting device of said lens in response to said focus control signal, and

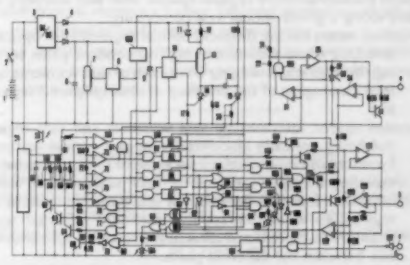
selecting means for determining said focus control signal to be an output signal of one of said plurality of band-pass filters which has the highest center frequency among those of said plurality of band-pass filters having a larger output than their associated reference level.

4,484,807

FLASH LIGHT WITH PRE-EMISSION CONTROL

Hiroyuki Kataoka, Saitama; Masanori Yamada, and Nobuyuki Suzuki, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1982, Ser. No. 452,875
Claims priority, application Japan, Jan. 6, 1982, 57-804
Int. Cl.³ G03B *7/00, 15/05*
U.S. Cl. 354—415 9 Claims



1. A flash device usable with a camera having a diaphragm control circuit for controlling the diaphragm based upon an aperture signal, comprising:

(a) flash emitting means for producing a preliminary light prior to making of an exposure and a main light when the exposure is made;

(b) aperture signal forming means receptive of said preliminary light after reflection from an object to be photographed for producing an aperture signal corresponding to said reflected light, said aperture forming means sensing said reflected light while holding its sensing state at a predetermined constant state, during the emission of the preliminary light;

(c) a light adjusting circuit receptive of said main light after reflection from said object and responsive to attainment by said reflected light of a predetermined value for stopping emission of the main light;

(d) said aperture signal forming means further including a limit circuit responsive to detection of the fact that said aperture signal represents an aperture outside a range of

cooperation for producing an aperture signal representing a limit aperture; and

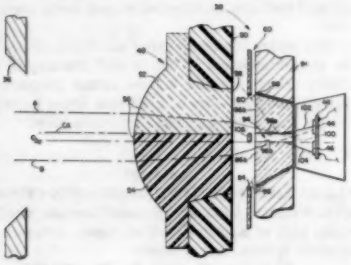
(e) adjusting means for adjusting the sensing operation of said light adjusting circuit in accordance with the aperture signal produced from said aperture signal forming means and upon production of said aperture signal from said limit circuit for adjusting the sensing operation of said light adjusting circuit in accordance with a predetermined limit value independently of the aperture signal.

4,484,808

METHOD OF AND APPARATUS FOR CONTROLLING SCENE RADIATION

Laura E. Keith, Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 1, 1982, Ser. No. 438,019
Int. Cl.³ G03B 7/099
U.S. Cl. 354—433 **15 Claims**



1. An optical assembly for use in controlling the direction of radiation from a scene to at least one of a plurality of closely-spaced photoresponsive regions spaced from said assembly and scene along a given optical axis comprising:

optical means having different optical segments for optically directing scene radiation along independent paths traveling through and emerging from each of said segments to at least one region of the plurality of closely-spaced regions; and

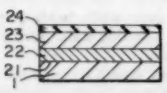
means spaced intermediate said segments and said regions and being optically associated with said optical segments for internally reflecting at least some of the scene radiation traveling along at least one of said paths, which would otherwise intersect the other of said paths, in front of the regions, so as to redirect the internally reflected scene radiation in a predicted direction to reduce optical cross-talk between the different paths.

4,484,809

GLOW DISCHARGE METHOD AND APPARATUS AND PHOTORECEPTOR DEVICES MADE THEREWITH

John H. Coleman, Locust Valley, N.Y., assignor to Plasma Physics Corporation, Locust Valley, N.Y.

Filed Jul. 17, 1981, Ser. No. 284,333
Int. Cl.³ G03G 15/00
U.S. Cl. 355—3 DR **24 Claims**



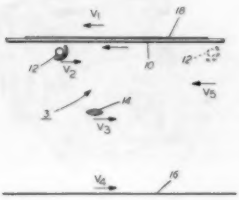
1. A photoreceptor comprising an electrically conductive substrate coated with a combination of a first layer of semiconductive material disposed on the surface of said substrate, and a layer of dielectric material disposed upon the surface of said first layer of semiconductive material whereby said combination is substantially blocking to charge carriers present in the dark and is conducting to charge carriers generated under electromagnetic radiation.

4,484,810

MOVING PLATEN PRECESSION SYSTEM

Richard A. Spinelli, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 20, 1983, Ser. No. 496,373
Int. Cl.³ G03G 15/28
U.S. Cl. 355—8 **2 Claims**



1. A scanning system for projecting light images of a document lying on a platen in an object plane along an optical path onto a flat portion of a photoreceptor moving through an image plane, said system comprising:

means for moving said photoreceptor at a first rate of speed V_4,

means for moving said platen in a direction opposite said photoreceptor motion and at a second speed V_1 which is less than said photoreceptor speed,

illumination means adapted to scan said document in a direction opposite said platen motion and at a third speed V_2 greater than said photoreceptor speed, and

a scanning projection lens positioned along the optical path between said illumination means and said photoreceptor and moving at a fourth rate of speed V_3 which is less than photoreceptor speed and in the same direction as said photoreceptor whereby said scanned image is projected through said lens and imaged, in precession fashion, onto said photoreceptor in a direction opposite to the direction of travel of said photoreceptor.

4,484,811

APPARATUS FOR FORMING AN IMAGE ON A RECORDING MEMBER

Kimio Nakahata, Kawasaki; Hatsuo Tajima, Matsudo; Naoki Iwami; Shunichi Masuda, both of Tokyo; Katsuichi Shimizu, Hoya; Yoshihiro Kawatsura, Kawasaki; Koji Suzuki, Yokohama, and Yoshikazu Yokomizo, Kawagoe, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 83,773, Oct. 11, 1979,. This application Dec. 9, 1981, Ser. No. 329,018
Claims priority, application Japan, Oct. 14, 1978, 53-126735; Oct. 14, 1978, 53-126737; Oct. 14, 1978, 53-126740
Int. Cl.³ G03G 15/00
U.S. Cl. 355—14 CH **22 Claims**

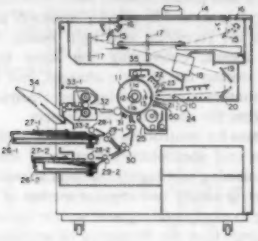
13. Image forming apparatus comprising:

operative means, including a plurality of operable parts, for forming an image on a recording member;

instruction means for selectively instructing the performance of first and second different tests on operative functions of the image forming means; and

control means for controlling the operation of said operable

parts in the performance of said tests under instruction by said instruction means, such that a particular one of said



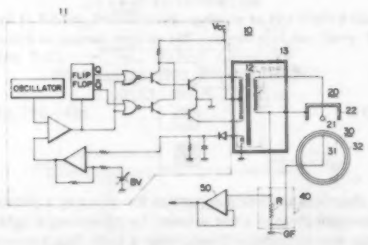
operable parts is caused to operate in both the first and second tests, but in different respective operational states.

4,484,812

ELECTROSTATIC CHARGING SYSTEM FOR ELECTROPHOTOGRAPHIC COPYING MACHINE

Hiroshi Takayanagi, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Toky, Japan

Filed Feb. 7, 1983, Ser. No. 464,365
Claims priority, application Japan, Feb. 8, 1982, 57-18491
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 CH **4 Claims**



1. An electrostatic charging system for an electrophotographic copying machine comprising:

a photoreceptor having a photoconductive layer placed on a conductive substrate connected to a grounded conductive frame,

electrostatic charging means disposed in the vicinity of said photoreceptor,

an a.c. high voltage power transformer for driving said electrostatic charging means, one end of the secondary winding of said transformer being connected to said electrostatic charging means,

a current detector connected between the other end of the secondary winding of said transformer and said conductive frame,

a conductive housing insulated from said conductive frame and enclosing said a.c. high voltage power transformer, and

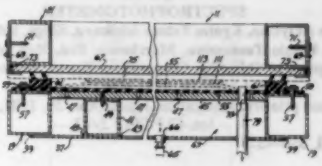
connecting means for connecting said conducting housing to said the other end of the secondary winding of said transformer.

4,484,813

VACUUM PRINTER

Robert J. Maher, Auburn Heights, and Ronald Tooson, Inkster, both of Mich., assignors to Douthitt Corporation, Detroit, Mich.

Filed Jan. 24, 1983, Ser. No. 460,673
Int. Cl.³ G03B *27/20*
U.S. Cl. 355—93 **6 Claims**



1. In a vacuum printer for the graphic arts, having a bed, a blanket frame upon said bed including a flexible impervious blanket having a peripheral sealing bead, a glass frame juxtaposed over the blanket frame in snug registry with said bead, defining a contact printing chamber, means movably mounting the glass frame for opening and closing movements relative to said blanket frame, a vacuum source having a first vacuum conduit extending into communication with said printing chamber for evacuating said chamber;

the improvement comprising a perforated blanket support plate within said blanket frame underlying said blanket and defining within said blanket frame a blanket chamber;

a second vacuum conduit interconnecting said vacuum source and said blanket chamber;

and a control means connected to said conduits for evacuating said blanket chamber, and after a pre-set period evacuating said printing chamber;

said vacuum source including an electric motor operated vacuum pump outletting to said conduits;

said control means including first and second solenoid control valves in said conduits respectively;

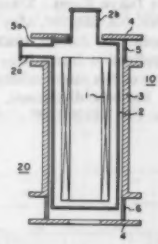
said control means further including an electronic power circuit to said valves and a pair of selectively operable timers connected to each valve.

4,484,814

SUPERCONDUCTIVE MAGNET

Takeo Kawaguchi, and Takashi Sato, both of Kobe, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1983, Ser. No. 495,822
Claims priority, application Japan, May 28, 1982, 57-91617
Int. Cl.³ H01F *7/00*
U.S. Cl. 335—301 **3 Claims**



1. A superconductive magnet shield enclosure for superconductive magnet comprising:

magnetic shielding material substantially enclosing said superconductor magnet;

connecting port means contained in said magnetic shielding

material for providing coolant supply pipe and current supply wiring pathways; and

non-magnetic material positioned in longitudinal and circumferential symmetrical positions from said connecting port means for maintaining the magnetic symmetry of said magnetic shield.

4,484,815

SPECTROPHOTOMETER

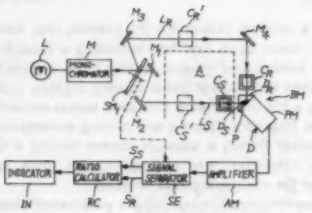
Osamu Akiyama, Kyoto; Tetsuo Ichikawa, Shiga, both of Japan, and Yoshio Tsunazawa, Meerbusch, Fed. Rep. of Germany, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Mar. 24, 1982, Ser. No. 361,145

Claims priority, application Japan, Apr. 30, 1981, 56-66357

Int. Cl.³ G01J *3/42*

U.S. Cl. 356—325 **8 Claims**



1. A double-beam spectrophotometer comprising: means for producing a monochromatic light beam; optical means for causing said beam to alternately advance along a first and a second optical path, the axes of which intersect at approximately 90°; a first cell disposed in said first optical path; a second cell disposed in said second optical path; photoelectric means disposed adjacent the point of intersection of said first and second optical paths; and means disposed in front of said photoelectric means for diffusing said monochromatic light beam of said first and second paths, said light diffusing means comprising a pair of light diffusing plates so arranged as to meet along corresponding sides thereof at approximately 90° thereby to form a roof-shaped configuration, said plates being positioned in front of the photosensitive surface of said photoelectric means so that said beams on said first and second optical paths are incident on said light diffusing plates perpendicularly thereto.

4,484,816

APPARATUS FOR MEASURING LENGTH OR ANGLE

Fumio Ohtomo, Kawagoe, and Kazuaki Kimura, Tokyo, both of Japan, assignors to Tokyo Kogaku Kikai K.K., Tokyo, Japan

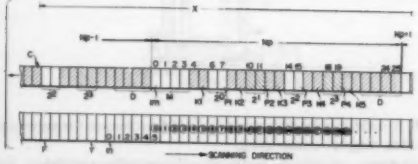
Continuation of Ser. No. 260,789, May 5, 1981, Pat. No. 4,412,745. This application Jul. 20, 1983, Ser. No. 515,454

Claims priority, application Japan, May 12, 1980, 55-62407

The portion of the term of this patent subsequent to Nov. 1, 2000, has been disclaimed.

Int. Cl.³ G01B *1/00, 11/14*

U.S. Cl. 356—372 **18 Claims**



1. A pattern reading apparatus comprising:

illuminating means for forming light beams in a predetermined pattern;

a storage effect type sensor including a photoelectric section illuminated by said predetermined pattern of light beams, said photoelectric section having a plurality of photoelectric elements for receiving said light beams from said illuminating means, converting the same to electric charges and storing the electric charges, and a register section for simultaneously storing the electric charges transferred from the photoelectric elements;

sensor drive means for controlling the transfer of the electric charges from said photoelectric section to said register section and scanning said register section to read out data therefrom and to empty said register section of contents, said scanning to empty said register section occurring at a frequency higner than the frequency of scanning to read out data from said register section and prior to the transfer control, and

illumination control means for controlling an illumination light quantity of said illuminating means during the scanning to empty said register section.

4,484,817

COLORIMETRIC CHEMICAL ANALYZING APPARATUS

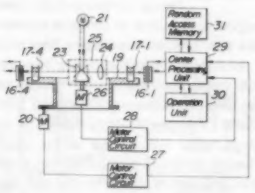
Toru Nobuto; Asao Hayashi; Koji Kambara; Hitomi Tojiki, and Nagahiro Gocho, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 6, 1982, Ser. No. 395,630

Claims priority, application Japan, Jui. 8, 1981, 56-105647

Int. Cl.³ G01J *3/50*

U.S. Cl. 356—416 **17 Claims**



1. A chemical analyzing apparatus for effecting a photometric measurement upon a test solution by projecting a light flux upon the test solution and receiving a light flux transmitted through or scattered by the test solution, comprising:

(a) optical means for projecting a light flux having a given spectrum range upon a test solution;

(b) filter means comprising a plurality of optical filters which have different transmission spectrum ranges within said given spectrum range, said filters being arranged side by side at such a position that at least a part of the light flux transmitted through or scattered by the test solution is passed through the optical filters;

(c) photoelectric converting means comprising at least one solid state image sensor having a plurality of light receiving elements, each of said light receiving elements being arranged to receive a light flux transmitted through a particular optical filter of said filter means to produce an output signal, wherein each of said light receiving elements comprises a photoelectrically converting element and a static induction transistor coupled to the photoelectrically converting element; and

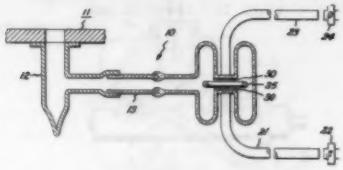
(d) signal processing means for selectively processing an output signal produced by at least one of said light receiving elements and producing an analytical result.

4,484,818

APPARATUS AND METHOD FOR DETECTING THE LOSS OF VACUUM

John M. Houston, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 5, 1982, Ser. No. 354,996
Int. Cl.³ G01N *21/17, 21/55*
U.S. Cl. 356—432 **14 Claims**



13. A method for detecting the loss of vacuum in an electrical vacuum circuit interrupter, said method comprising the step of:

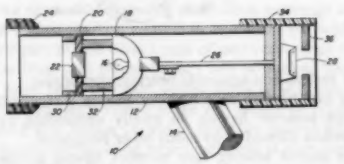
determining the optical reflectivity of a barium film disposed on an interior, light-transmissive portion of a distinct housing in fluid communication with the vacuum chamber of said vacuum interrupter.

4,484,819

REFLECTOMETER

Richard D. Ulrich, Provo, Utah, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 16, 1982, Ser. No. 388,863
Int. Cl.³ G01N *21/47*
U.S. Cl. 356—446 **4 Claims**



1. A surface reflectometer comprising:

a tube with an open end;

a light source mounted within said tube;

a reflector mounted within said tube and around said light souurce, such that light from said light source is reflected towards said tube's open end;

a diffuser placed in said tube such that all of said light traveling towards said tube's open end must pass through said diffuser prior to reaching said tube's open end;

a light sensor placed in between said diffuser and said tube's open end, said light sensor only receiving light into said tube from said tube's open end;

an electrical circuit connected to said light sensor to measure the amount of light colected by said light sensor;

display means connected to said electrical circuit to display the amount of light received by said light sensor; and

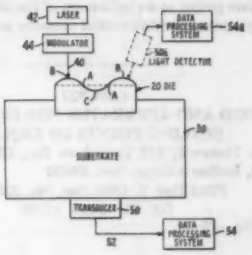
a light shield around said light tube's open end.

4,484,820

METHOD FOR EVALUATING THE QUALITY OF THE BOND BETWEEN TWO MEMBERS UTILIZING THERMOACOUSTIC MICROSCOPY

Allan Rosencwaig, Danville, Calif., assignor to Therma-Wave, Inc., Fremont, Calif.

Filed May 25, 1982, Ser. No. 381,891
Int. Cl.³ G01N *25/00, 29/00*; G01K *11/22*
U.S. Cl. 374—6 **57 Claims**



1. A method for evaluating the quality of the bond achieved between a combination of a first and second member comprising the steps of:

causing a periodic localized heating in at least one microscopic spot in said first member to produce thermal waves which in turn give rise to acoustic waves of a longer wavelength that propagate through said combination with the frequency of said periodic heating causing said combination to resonate;

detecting the acoustic waves produced in said combination and generating signals therefrom;

processing said signals to obtain a plate-mode resonant signature of said first and second member combination; and

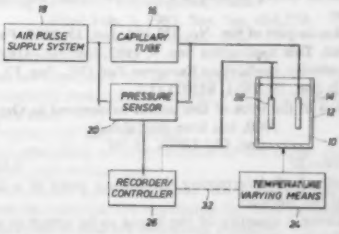
comparing said obtained plate-mode resonant signature to a predetermined plate-mode resonant signature associated with a similar combination where the quality of the bond is known whereby the quality of the bond between said members can be evaluated.

4,484,821

METHOD AND APPARATUS FOR DETERMINING THE NO-FLOW TEMPERATURE OF A LIQUID

Richard R. Willcock, Chester, England, assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 390,453, Jun. 21, 1982, abandoned.
This application Mar. 13, 1984, Ser. No. 587,867
Claims priority, application United Kingdom, Jul. 1, 1981, 8120341
Int. Cl.³ G01N *25/12, 11/00*; G01K *13/00*
U.S. Cl. 374—24 **8 Claims**



1. A method of sensing the no-flow temperature of a liquid, said method comprising the steps of: supplying pressure pulses

to said liquid through a supply line that includes a serially connected capillary tube and a serially connected probe which is positioned in said liquid; varying the temperature of said liquid by decreasing the temperature of said liquid at least to the temperature at which said pressure pulses cannot flow into said liquid and increasing the temperature of said liquid at least to the temperature at which said pressure pulses can flow into said liquid; sensing the temperature of said liquid proximate to the location at which said pressure pulses are supplied to said liquid; and sensing the resistance of said liquid to the flow of said pressure pulses as an indication of the ability of said liquid to flow by sensing the differential pressure across said capillary tube.

4,484,822

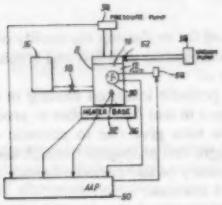
METHOD AND APPARATUS FOR DETERMINING BOILING POINTS OF LIQUIDS

Robert D. Hancock, 475 Lakeshore Dr., Chrystal Bay Cove, Unit 32, Incline Village, Nev. 89450

Filed Dec. 1, 1981, Ser. No. 326,274

Int. Cl.³ G01K *17/00*

U.S. Cl. 374—27 **6 Claims**



1. An ebulliometric measurement system for measuring boiling points of liquids comprising:

vessel means for statically containing a liquid at determined pressure,

heating means for selectively heating a predetermined spot within said liquid contained in said vessel to determined temperature above the ambient temperature of said liquid surrounding said spot,

control means for controlling at least one of said pressure and temperature to cause bubbling to occur substantially exclusively from said spot and thereafter to stop said bubbling, and

means for signaling the pressure in said liquid and the temperature of said spot substantially coincident with the cessation of said bubbling.

4,484,823

METHOD OF DETERMINING THE BOILING POINT OF A LIQUID

Karl Peuker, Ebern, Fed. Rep. of Germany, assignor to FAG Kugelfischer Georg Schäfer & Co., Schweinfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 339,104, Jan. 13, 1982, Pat. No. 4,408,902. This application Sep. 9, 1982, Ser. No. 416,132

Claims priority, application European Pat. Off., Jan. 17, 1981, 81100334.2; Sep. 10, 1981, 81107111.7

The portion of the term of this patent subsequent to Oct. 11, 2000, has been disclaimed.

Int. Cl.³ G01N *25/08*

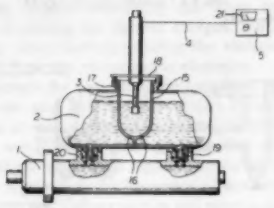
U.S. Cl. 374—27 **3 Claims**

1. A method of determining the boiling point of a liquid, comprising the steps of:

(a) confining a quantity of the liquid to be tested in a first chamber in a container having a space open at the top to a larger gas volume and in communication at the bottom with a larger body of the same liquid;

(b) gradually heating the liquid in said space with a sensor in a probe;

(c) continuously measuring the temperature by said probe in a space in a second chamber within said probe during the heating step; and



(d) registering the occurrence of a substantial cessation of temperature rise measured in step (c) as an indication of the boiling point of the liquid having been reached.

4,484,824

SEALED NON-SEPARABLE COMBINED BEARING

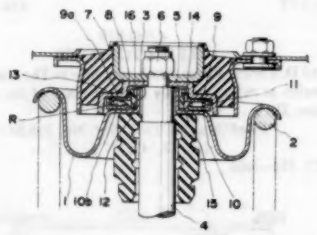
Seiji Higuchi, Fujisawa, and Moichi Chiba, Yokosuka, both of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 8, 1983, Ser. No. 521,122

Claims priority, application Japan, Aug. 9, 1982, 57-119959[U]

Int. Cl.³ F16C *21/00*

U.S. Cl. 384—126 **4 Claims**



1. A sealed, non-separable bearing, comprising:

(a) a first bearing race member having a race surface, the race member having an axially upstanding cylindrical portion formed at its radial inner periphery;

(b) a second bearing race member having a race surface opposed to the race surface of the first race member, the second race member including a coupling flange formed at the radial inner periphery thereof and being contiguous therewith;

(c) a set of bearing rollers disposed between the race surfaces for receiving a thrust load;

(d) a cyilndrical radial bearing member fitted within the cylindrical portion of the first race member, the bearing member including an annular engaging lip formed at an upper end thereof, and a coupling lip at a lower end thereof, the coupling lip having an outside diameter greater than the inside diameter of the coupling flange to permit the lip to extend up to the lower face of the coupling flange, and

(e) an axial sealing member formed on the outer periphery of one of the race members, the sealing member being defined by a bent portion of the outer periphery of one of the race members, the sealing member covering the radial outer side of the bearing rollers.

4,484,825

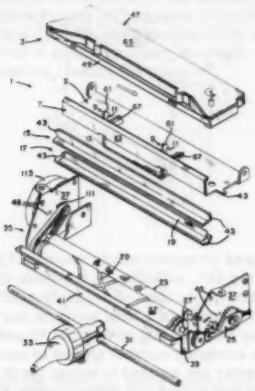
TRANSPORT SYSTEM FOR A DOT MATRIX PRINTING MECHANISM

Robert H. Wilczewski, and James E. Blomquist, both of 203 E. Main, Riverton, Wyo. 82501

Division of Ser. No. 362,833, Mar. 29, 1982, , which is a division of Ser. No. 228,995, Jan. 27, 1981, abandoned, which is a division of Ser. No. 38,910, May 14, 1979, Pat. No. 4,257,282. This application May 31, 1983, Ser. No. 498,678

Int. Cl.[3] B41J *3/12, 23/34*

U.S. Cl. 400—124 12 Claims



1. In a dot matrix printing mechanism having a print head, an elongated strike bar with a flat platen surface, and means for mounting said print head for movement relative to said strike bar with said print head facing said platen surface, the improvement comprising:

a ribbon cartridge assembly having a main body, a continuous ribbon, and means for guiding said continuous ribbon about a closed path with a first part of said closed path passing through said main body and a second part passing outside of and spaced from said main body, and

means for releasably mounting said ribbon cartridge assembly in a fixed position relative to said strike bar with said second part of said closed path of said continuous ribbon spaced from said platen surface and positioned between said print head and said platen surface, said mounting means including a ribbon frame and means for releasably securing said ribbon cartridge assembly against said ribbon frame, said securing means including at least one latch member having first and second end portions, one of said end portions having a catch means, means for pivotally mounting said latch member to said ribbon frame for movement about a pivotal axis with said catch means spaced from said pivotal axis, and means for biasing said one end portion and said catch means of said latch member for movement about said pivotal axis away from said strike bar whereby said one end portion and said catch means of said latch member can be moved about said pivotal axis against the force of said biasing means, said ribbon cartridge assembly placed against said ribbon frame, and said one end portion and catch means released with said biasing means moving said catch means about said pivotal axis away from said strike bar to abut said ribbon cartridge assembly and secure said ribbon cartridge assembly against said ribbon frame, said biasing means including at least one spring member and means for mounting said spring member between said strike bar and said one end portion of said latch member.

4,484,826

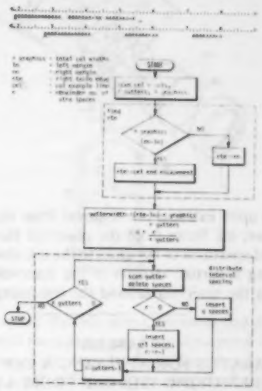
AUTOMATIC INTERTEXT COLUMN SPACING

Gary R. Horn, and Kenneth O. Shipp, Jr., both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 24, 1981, Ser. No. 305,255

Int. Cl.[3] B41J *25/18*.

U.S. Cl. 400—279 3 Claims



1. A method for forming a multiple text column table within a page, the space between adjacent columns being denominated a gutter, the left edge of the leftmost column and the right edge of the rightmost column being denominated a page or table margin, said method evenly adjusting the gutters between columns during the formatting of the multiple text columns on the page in an interactive word processing system formed from a keyboard, display, memory for storing formatted information, and an intercoupling microprocessor, comprising the steps of:

operator entering of a line of at least two column width examples of repeated text and control characters; and

responsive to function key actuation, the machine step of modifying the example line by the automatic insertion of space characters into the gutters between column examples approximating the unoccupied escapement between the page margins divided by the number of gutters, said machine step further including the steps of ad seriatim scanning each gutter and removing space characters encountered therein, initializing a counter index to the number of spaces to be inserted, and inserting the space characters and decrementing the index for each insertion until the index is exhausted.

4,484,827

INK CARTRIDGE

Lewis C. Price, Jr., Yonkers, N.Y., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Feb. 7, 1983, Ser. No. 464,279

Int. Cl.[3] B43K *5/04*

U.S. Cl. 401—205 7 Claims

1. An ink applicator device comprising

a collapsible reservoir for storing a supply of ink having an open end;

a container for said reservoir;

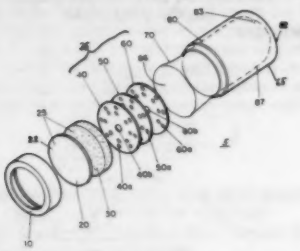
an ink-absorbing member located at the outlet end of said applicator device; and

barrier means located between the ink-absorbing member and the reservoir for regulating the flow of ink from said reservoir to said ink-absorbing member;

said barrier means comprising a plurality of disks having a plurality of apertures through which ink can flow, said disks coaxially juxtaposed so that the apertures of adjacent

disks are in substantial nonalignment and said disks being in nonadhesive contact;

wherein the container has at least one air vent thereby exposing the reservoir exterior surface to ambient pressure;



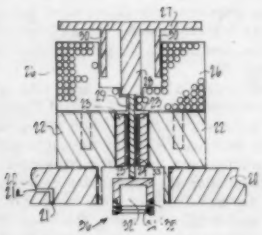
wherein upon external ink removal from the ink-absorbing member, ink flows from the reservoir through said nonaligned apertures of the disks to the ink-absorbing member creating a partial vacuum in the reservoir partially collapsing the reservoir around the remaining ink therein.

4,484,828

APPARATUS FOR APPLYING A CAP TO AND REMOVING THE CAP FROM A PIN

Augustus W. Griswold, Rush, N.Y., assignor to Crosfield Data Systems, Inc., Springfield, Va.

Filed Jun. 16, 1982, Ser. No. 389,134
Int. Cl.[3] B42F *3/00*; B41F *1/28*
U.S. Cl. 402—60 **13 Claims**



1. In a device for applying a cap to and removing it from a pin, said cap having an elongated cavity for receiving the pin, the cap having means associated with said cavity for frictionally engaging the pin to hold the cap to the pin, the cap, however, being removable from the pin upon application of sufficient force to overcome said frictional engagement holding the cap to the pin,

the improvement comprising:

cap holding means for positioning said elongated cavity in substantial alignment with the pin and pressing the cap on the pin with the pin extending into said cavity,

said cap holding means including means for selectively holding and releasing the cap, and,

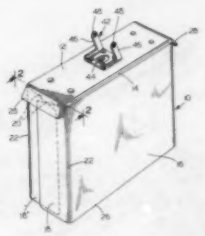
means operable to place the cap holding means in its holding mode, or to place it in its release mode; so that when it is desired to hold the cap away from the pin and then press the cap on the pin the cap holding means may be placed in its holding mode and when it is desired to remove the cap holding means from the vicinity of the pin the cap holding means may be placed in its release mode, and so that when it is desired to remove the cap from the pin the cap holding means may be placed around the cap and placed in its cap holding mode and then pulled away from the pin whereby the holding force of the cap holding means will be greater than the force required to remove the cap from the pin.

4,484,829

PROTECTIVE DIRECTORY COVER

Robert W. Dickerson, 34 Glenview Dr., Cromwell, Conn. 06416

Filed Oct. 18, 1982, Ser. No. 434,926
Int. Cl.[3] B42F *3/00*; B42D *3/00*
U.S. Cl. 402—70 **5 Claims**



1. A ventilated protective cover assembly for a telephone directory or the like, including: a one-piece cover member integrally formed from a sheet of relatively rigid thermoplastic material and comprised of a front cover, a rear cover, and a spine extending between said covers and hingedly connected thereto; and a mounting member affixed to said spine within said cover member and adapted to mount the directory therewithin, each of said covers comprising a panel portion dimensioned and configured to overlie a cover of the mounted directory, and a pair of flange portions disposed at the opposite ends of said panel portion, said flange portions at each end of said assembly extending toward one another from the associated panel portion, into overlapping relationship when said covers are in a closed position about the directory, to cooperatively overlie the top and bottom edges thereof, the inner ends of said cooperating flange portions being configured to define an opening adjacent each end of said spine for air circulation through said assembly, each of said flange portions being defined by (a) a fold line along which said flange portion is joined to said panel portion, (b) a shorter rectilinear leading edge extending generally parallel thereto, (c) an inner edge at said inner end extending at an acute angle to said fold line, and (d) an outer edge at the outer end thereof, said inner edges of said cooperating flange portions intersecting at points spaced from said spine to define said air flow openings in said closed position of said assembly, said spine having a shield piece projecting outwardly from each end thereof substantially over the adjacent one of said openings, said shield pieces preventing the direct entry of rain into the corresponding opening, without blocking the free flow of air therethrough.

4,484,830

LOOSE-LEAF BINDER

Kenneth Anderson, 214 Indian Rd., Toronto, Ontario, Canada M6R2W6

Filed Jun. 11, 1982, Ser. No. 387,727
Int. Cl.[3] B42F *13/00, 13/16*
U.S. Cl. 402—77 **3 Claims**

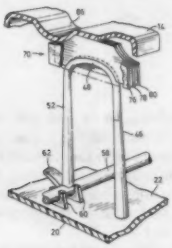
1. A loose-leaf binder for storing pages which have a plurality of holes spaced apart in a predetermined arrangement, comprising:

a cover including a first cover member with inner and outer surfaces and a second cover member with inner and outer surfaces, the first and second cover members hingedly connected whereby the cover members are hingedly movable between a closed orientation in which the inner surface of the cover members can be located about the pages and an open orientation on which the pages can be ac-

cessed, the second cover member molded of a thermoplastic material;

a plurality of substantially parallel posts injection molded with the inner surface of the second cover member and spaced apart in the predetermined arrangement so that the posts can be inserted into the holes of the pages;

page retainment means releasably securable to the posts to prevent removal of pages received on the posts, the page retainment means including a plurality of arched members mounted on an axle and axle mounting means attached to the inner surface of the second cover member for retaining the axle in pivoting engagement, the axle mounting means adapted to permit pivoting of the axle between a first position in which each of the arched members engages a corresponding different one of the posts at a post portion distal from the inner surface of the second cover member and a second position in which none of the arched members engages the posts;



one of the arched members being formed with a stud, and the corresponding one of the posts being formed with a recess dimensioned to receive the stud to lock the axle in the first position, and at least the one of the arched members being formed of a plastic material sufficiently resilient to permit the arched member to be momentarily deformed in an elastic manner to permit removal of the stud from the recess in the corresponding one of the posts;

lock means for releasably locking the first cover member to the second cover member in the closed orientation; and,

reinforcement means secured to the inner surface of the first cover member for engaging at least the one of the arched members when the cover is hingedly moved into the closed orientation to prevent deflection of at least the one of the arched members relative to the inner surface of the second cover member.

4,484,831

PIPE OR TUBE ASSEMBLY UTILIZING A DIFFERENTIAL SCREW

Wallace A. Hanson, Jr., and Russell B. Hanson, both of 94 Valley Hill Rd., Riverdale, Ga. 30274

Filed Sep. 24, 1982, Ser. No. 423,066

Int. Cl.³ F16B 7/18

U.S. Cl. 403—7 **11 Claims**

1. A piston rod assembly for hydraulic elevator comprising:

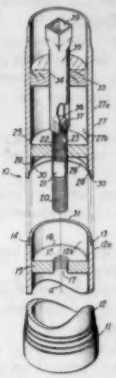
(a) a first hollow cylindrical pipe or tube having a central axis and an open end;

(b) a second hollow cylindrical pipe or tube having a central axis and open at both of its ends, said first pipe or tube and said second pipe or tube being arranged coaxially end-to-end with the open end of said first pipe or tube abutting one open end of the second pipe or tube said first pipe or tube and said pipe or tube being of the same outside diameter to form a pipe or tube joined at the abutting ends and having concentric and axially aligned outer peripheral surfaces;

(c) a flange within the hollow interior adjacent to said abutting end of said first pipe or tube;

(d) a second flange within the abutting end of said second pipe or tube; said first flange and said second flange having central axially aligned holes respectively therein, said flanges being respectively provided with internal threads of diferent pitch for said holes; and

(e) a central shaft received in said holes, said shaft having



separate external threads along opposite end portions of said shaft, said threads respectively coresponding in pitch to the pitches of the threads of said flanges whereby rotation of said shaft will cause movement of said pipes or tubes toward or away from each other.

4,484,832

CONNECTION COUPLING FOR THE RELEASABLE ATTACHMENT OF AN END OF A FIRST ROD WITH A SECOND ROD

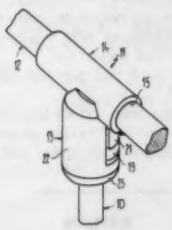
Heinz Weissenberger, Klettgau-Weisweil, Fed. Rep. of Germany, assignor to Gebrüder Pletscher, Marthalen, Switzerland

Filed Aug. 27, 1982, Ser. No. 412,250

Claims priority, application Switzerland, Sep. 15, 1981, 5980/81

Int. Cl.³ F16B 7/08

U.S. Cl. 403—191 **11 Claims**



1. A connection coupling for the releasable attachment of an end of a first rod with a second rod, comprising:

a first coupling part and a second coupling part;

said first coupling part being arranged at an angle with respect to said second coupling part;

said first coupling part being provided with a bore for receiving said first rod;

said second coupling part being provided with a bore for receiving said second rod;

the second coupling part being provided with a continuous longitudinal slot extending throughout the length of its bore;

the second coupling part having first and second lateral edge

regions defining an intermediate element therebetween and which lateral edge regions bound said continuous longitudinal slot;

the first coupling part being divided transversely with respect to its bore into first and second coupling portions;

said first lateral edge region supporting said first coupling portion of the first coupling part;

said second lateral edge region supporting said second coupling portion of the first coupling part;

said first coupling portion being situated closer to the lengthwise slotted second coupling part than said second coupling portion;

each of the first and second coupling portions surroundingly defining parts of the length of said bore of the first coupling part;

the first coupling portion being integrally formed directly at the first lateral edge region bounding the continuous longitudinal slot;

the second coupling portion being integrally formed at the second lateral edge region; and

an elastic web which is integral with the second lateral edge region and connected to said second coupling portion whereby said intermediate element elastically biases said portions of the length of the bore of the first coupling part defined by the first and second coupling portions thereof out of mutual axial alignment in a direction substantially perpendicular to said first rod.

4,484,833

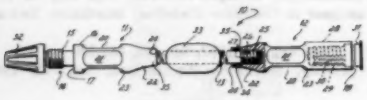
SUCKER ROD

Hugh M. Gallagher, Jr., Cincinnati, Ohio, assignor to Consolidated Metal Products, Inc., Cincinnati, Ohio

Filed Sep. 30, 1981, Ser. No. 307,190

Int. Cl.³ B25G *3/34*

U.S. Cl. 403—267 **20 Claims**



1. A plural element sucker rod comprised of:

an elongate rod having two ends, said elongate rod being formed from cold-drawn steel and comprising the main body member of said sucker rod,

two end portions, said end portions being formed from cold-drawn steel,

said two end portions being fixedly attached one to each end of said elongate rod and having means thereon for the detachable coupling of said sucker rod into a sucker rod string.

4,484,834

PAVERS

Murray A. Rowe, and Ewald R. Ulmer, both of Canton, S. Dak., assignors to Bid-Well Corporation, Canton, S. Dak.

Filed Oct. 27, 1982, Ser. No. 419,970

Int. Cl.³ E01C *19/40*; E02D *5/00*

U.S. Cl. 404—84 **10 Claims**

1. A paver for paving a sloping surface comprising

an elongated supporting means for extending longitudinally across the lateral width of such a sloping surface and movable laterally along the length of said sloping surface

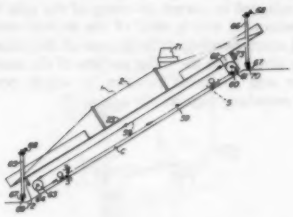
a pan for engaging concrete disposed on said sloping surface

other means supporting said pan from said elongated supporting means for reciprocation travel along said supporting means upwardly and downwardly along said sloping surface,

power means connected to said other means for reciprocating the latter and said pan along said elongated supporting means,

control means on said other means for reversing the operation of said power means at each end of the path of travel of said other means and said pan along said elongated supporting means and thereby cause said other means and said pan to reverse their direction of travel along said elongated supporting means,

means on said other means for lowering said pan into position to spread and smooth concrete on said sloping surace



at the start of movement of said pan along said path of travel upwardly of said sloping surface, and, raising said pan from engagement with said concrete at the end of said path of travel upwardly of said sloping surface, and maintaining said pan in said raised position during movement of the latter along said path of travel downwardly of said sloping surface, and

vibrator means connected to said pan for vertically vibrating said pan to thereby compact concrete beneath said pan during said movement of said pan upwardly of said sloping surface.

4,484,835

METHOD AND APPARATUS FOR INSTALLING GROUND-WATER BARRIER

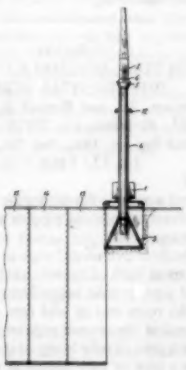
Peter G. van Klinken, Oudenbosch, Netherlands, assignor to Stevin Construction Inc., Dover, Del.

Filed Sep. 8, 1982, Ser. No. 415,803

Claims priority, application Netherlands, Sep. 25, 1981, 8104253

Int. Cl.³ E02D *19/12*

U.S. Cl. 405—52 **4 Claims**



1. A method for manufacturing a ground-water barrier by introducing multiple, flexible, water-restraining, non-self supporting sheets into the soil, said method comprising

introducing a first said sheet downwardly through the soil by releasably attaching the lower edge of said sheet to a

liquid-ejecting lance having substantially the same width as said sheet, moving said lance together with said sheet downwardly through the soil while simultaneously ejecting liquid from the lance downwardly into the path of said lance, disconnecting the lance from said sheet, and retracting the lance from the soil, and

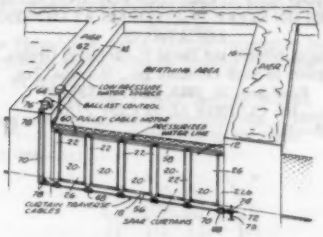
introducing a second said sheet into said soil, positioned so that a portion of said second sheet sealingly overlaps a portion of said first sheet, whereby sealing is brought about along said overlapping portions.

4,484,836

PNEUMATIC SPAR SEDIMENT CONTROL CURTAIN

James A. Ballard, 5333 Ogan Rd., Carpinteria, Calif. 93013

Filed Jul. 26, 1982, Ser. No. 401,948
Int. Cl.³ E02B 8/02
U.S. Cl. 405—74 **8 Claims**



1. An apparatus for preventing infusion of sediments into a berthing area of the type having spaced apart, fixed side structures extending downward to the floor of the water body and defining at their outer extremities the opening to the berthing area, said apparatus comprising:

(a) a spar curtain barrier made up of a plurality of adjacent flexible sections secured together to form an elongated integrated structure adapted, in its closed position, to extend between the spaced apart fixed structures of the berthing area proximate their outer extremities and to depend downwardly to a level proximate the floor of the water body and, in its open position, to accordion together toward one of the fixed structures, each said flexible section comprising:

(1) at least one flotation member comprising sealed hollow body having a fluid inlet; and

(2) a flexible curtain having a top, a bottom and a pair of spaced apart edges, said curtain being connected along one edge to said hollow body and adapted to be connected along its opposite edge to said hollow body of the flotation member of the next adjacent barrier section;

(b) water supply means operably interconnecting a source of water under pressure with said fluid inlets of each of said flotation members for controllably introducing water under pressure into said hollow bodies thereof; and

(c) operating means connected to one of said fixed side structures and operably associated with said spar curtain barrier for the opening and closing thereof.

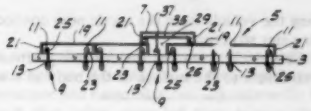
4,484,837

MINE STOPPING LAP-OVER PANEL CLAMP

John M. Kennedy, and William R. Kennedy, both of P.O. Box 38, Taylorville, Ill. 62568

Filed Jul. 11, 1983, Ser. No. 512,361
Int. Cl.³ E21D 9/00; E21F 1/00
U.S. Cl. 405—132 **3 Claims**

1. For use in a mine stopping comprising a plurality of elongate extensible panels extending vertically from the floor to the roof of a passageway in a mine, each panel being of channel shape in cross section thereby comprising a web and flanges at opposite sides of the web, and having inturned portions at the outer edges of the flanges, and lips at the inner edges of the inturned portions extending toward the web, said stopping comprising a series of said panels constituting main panels extending vertically side-by-side, with a space between two adjacent main panels, and further comprising one of said panels constituting a lap-over panel extending vertically and bridging said space with the inturned portions of its flanges engaging the webs of said two adjacent main panels, at least one bar extending substantially horizontally between ribs at opposite sides of the passageway engaging the inturned portions of the flanges of the main panels of said series, a plurality of U-shaped wire ties for securing the main panels to the bar, each tie having a hook at each end hooked to the lips of the main panels, the tie extending around the bar and being twisted to draw the bar and main panels together:



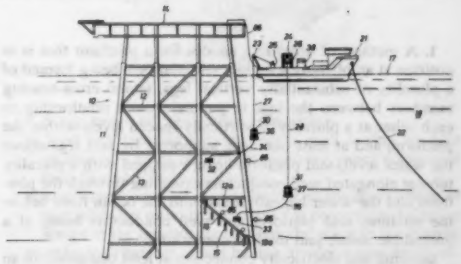
a clamp for clamping the lap-over panel in place with the inturned portions of its flanges engaging the outside of the web of the two adjacent main panels comprising a crosshead adapted to fit in the lap-over panel extending laterally of the lap-over panel between its side flanges in engagement with the lips of the lap-over panel and having end portions extending therefrom in the direction to extend into the spaces between the lips and the flanges of the lap-over panel toward the inturned portions of the flanges of the lap-over panel, a hook-receiving stem slidable on the crosshead lengthwise of the crosshead and extending from the crosshead in the same direction as said end portions, said slidable hook-receiving stem being formed to have the hooks at the ends of a wire tie hooked thereto with the tie extending around said bar to draw the crosshead via said stem toward the lips of the lap-over panel.

4,484,838

METHOD AND APPARATUS FOR INSTALLING ANODES AT UNDERWATER LOCATIONS ON OFFSHORE PLATFORMS

James W. Stevens, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 9, 1982, Ser. No. 366,804
Int. Cl.³ B63C 11/00
U.S. Cl. 405—191 **22 Claims**



1. Method of attaching a cathodic-protection system anode provided with connector means to an underwater structure with a television-equipped self-propelled underwater vehicle equipped with thrusters adapted to be powered and operated with operations and underwater environment being observed visually at the surface for selectively controlling the operations

from a surface location connected to the vehicle by a power- and signal-transmitting cable, said method comprising:

above the surface of a body of water, attaching an anode to be carried to the self-propelled underwater vehicle in a disconnectible manner at a point below the center of gravity of said vehicle,

adjusting the vehicle and the connected anode to at least neutral buoyancy,

lowering the vehicle and anode through the water together and propelling the vehicle and anode to a position adjacent a selected member of the underwater structure to which the anode is to be transferred from the vehicle to the underwater structure,

connecting the anode to the selected point on the underwater structure,

decreasing the buoyancy of the vehicle to a value sufficient to maintain the vehicle alone at just above neutral buoyancy,

disconnecting the vehicle from the anode now connected to the underwater structure,

propelling the vehicle from the underwater position adjacent the structure to the surface of the body of water.

4,484,839

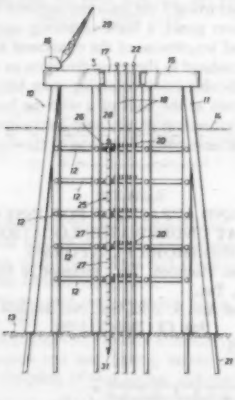
METHOD AND APPARATUS FOR INSTALLING ANODES ON STEEL PLATFORMS AT OFFSHORE LOCATIONS

Samlal Nandlal, Slidell, and David P. McGuire, Gretna, both of La., assignors to Shell Offshore Inc., Houston, Tex.

Filed Sep. 28, 1983, Ser. No. 536,793

Int. Cl.[3] E02B *17/00*; C23F *13/00*

U.S. Cl. 405—211 **19 Claims**



1. A method of providing anodes for a platform that is in position at an offshore location, said platform being formed of a plurality of substantially vertical legs, lateral cross-bracing members between the legs in parallel-spaced relationship to each other at a plurality of vertically-spaced levels within the platform, and at least one deck supported by said legs above the water level, said platform being equipped with a plurality tubular elongated well conductors extending through the platform and the water beneath it and into the ocean floor below the mudline, said platform and well conductors being of a corrodible metal, said method comprising:

securing and electrically connecting at least one anode to an elongated tubular anode carrier section,

assembling a plurality of said anode carrier sections at the platform at its offshore location,

connecting, at a point above the water line, a plurality of said anode carrier sections in end-to-end relationship to form an elongated tubular long anode apparatus,

positioning said long anode apparatus vertically in the platform below the deck thereof in the vicinity of, but out of contact with, the well conductors,

lowering said long anode apparatus, as it is being formed, down through the water and between the spaced lateral bracing members of the platform at a point selected in the vicinity of the well conductors,

continuing to connect additional anode carrier sections to the top of the long anode apparatus to form said apparatus having a length at least sufficient to extend over at least a major portion of the water depth in which the platform is located,

supporting the long anode apparatus in weight-supporting engagement adjacent to the well conductors, and

electrically connecting said long anode apparatus at a plurality of positions along the length thereof to the platform.

4,484,840

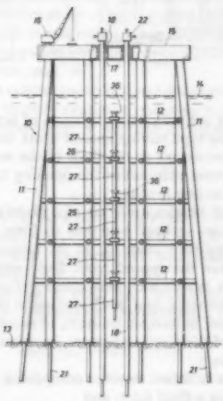
METHOD AND APPARATUS FOR INSTALLING ANODES ON STEEL PLATFORMS AT OFFSHORE LOCATIONS

Samlal Nandlal, Slidell, and David P. McGuire, Gretna, both of La., assignors to Shell Offshore Inc., Houston, Tex.

Filed Sep. 28, 1983, Ser. No. 536,807

Int. Cl.[3] E02B *17/00*; C23F *13/00*

U.S. Cl. 405—211 **36 Claims**



1. A method of providing anodes for a platform that is in position at an offshore location, said platform being formed of a plurality of substantially vertical legs, lateral cross-bracing members between the legs at a plurality of vertically-spaced levels within the platform to form a platform substructure, and at least one deck supported by said legs above the water level, said platform being equipped with a plurality tubular elongated well conductors extending through the platform and the water beneath it and into the ocean floor below the mudline, said platform and well conductors being of a corrodible metal, said method comprising:

securing and electrically connecting at least one anode to an elongated tubular anode carrier section,

assembling a plurality of said anode carrier sections at the platform at its offshore location,

continually forming a long anode apparatus underwater by lowering a first anode carrier section in the water through the platform substructure to a pre-selected lateral cross-bracing member of said platform substructure at the deepest water location where anodes are to be added,

connecting at least one pre-selected point of said first anode carrier section to said pre-selected cross-bracing member of said platform substructure against lateral movement and in weight-supporting engagement therewith,

electrically connecting said first anode carrier section to the platform substructure,

successively lowering additional anode carrier sections one at a time through the water to a position that is in axial alignment with said next lower anode carrier section,

operatively engaging underwater the lower end of each added anode carrier section to the upper end of the lower anode carrier section,

connecting at least one pre-selected point of each newly-positioned higher anode carrier section to an adjacent cross-bracing member of said platform substructure prior to lowering the next to-be-added anode carrier section, and

electrically-connecting each of said anode carrier sections to said platform substructure.

4,484,841

OFFSHORE PLATFORM STRUCTURE FOR ARTIC WATERS

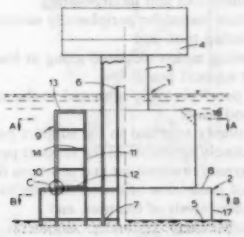
Thomas Einstabland, Asker, Norway, assignor to Ingenior Thor Furuholmen A/S; A/S Høyer-Ellefsen and Ingenior F. Selmer A/S, all of Oslo, Norway

Filed Mar. 1, 1982, Ser. No. 353,352

Claims priority, application Norway, Sep. 2, 1980, 802586

Int. Cl.³ E02B *3/22*; E02D *21/00*

U.S. Cl. 405—212 **13 Claims**



1. An offshore concrete gravity platform structure for installaion on a sea bed in artic waters, said platform comprising:

a substructure completely submerged and adapted to be supported by the sea bed when in an installed position, a superstructure extending up from the substructure, a deck supported by said superstructure, said deck being above the sea water surface, said substructure having a top, said top supporting a fender, said fender comprising a cylindrical ring-shaped body located concentrically with said superstructure, means to ballast said fender for resting said fender on said substructure, said fender to be displaced relatively to said substructure and said superstructure when impacted by large iceberg masses and thus protecting said substructure and said superstructure.

4,484,842

APPARATUS AND METHOD FOR CENTRALLY INSTALLING A SHORING COLUMN INTO A PREDRILLED GROUND HOLE

Bernd Engelhaupt, Heinsberg, Fed. Rep. of Germany, assignor to Josef Krings, Heinsberg-Oberbruch, Fed. Rep. of Germany

Filed Dec. 28, 1982, Ser. No. 453,908

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1981, 31518567

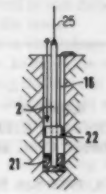
Int. Cl.³ E02D *13/04*

U.S. Cl. 405—232 **11 Claims**

1. An apparatus for centrally installing a shoring column into a predrilled ground hole, comprising:

a ring-shaped supporting structure having an outside diameter slightly smaller than the diameter of the drilled ground hole, and having a central opening therethrough of a diameter larger than the cross section of the shoring column,

clamping means attached to the interior of the ring-shaped supporting structure and including diametrically opposed clamping elements movable towards each other to clamp a column positioned therebetween,



and a plurality of centralizing piston and cylinder units attached to the interior of the ring-shaped supporting structure and extendable radially outwardly therethrough, such that when extended they engage the side of the ground hole to centralize the column therein,

and remote control means for controlling the clamping means and piston and cylinder units from a location exterior to the ground hole.

4,484,843

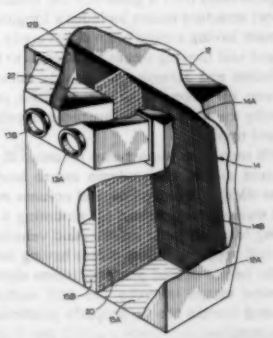
PNEUMATIC CONVEYING SCRAP PAPER SALVAGE SYSTEM

Robert G. McGlinsky; Steve Allyn, both of Mound, and James R. Whittenberg, Fridley, all of Minn., assignors to Contamination Control Corp., Maple Plain, Minn.

Filed Jul. 26, 1982, Ser. No. 401,965

Int. Cl.³ B65G *53/60*

U.S. Cl. 406—170 **5 Claims**



1. Scrap paper salvage system comprising:

at least two separate conduit means each having an inlet located at a work station for receiving paper scraps and each having a discharge outlet;

blower means coupled to said conduit means downstream of said inlets for providing air flow for conveying the paper scraps in the conduit means from the inlets to the outlets;

an enlarged chamber means having divider means for dividing the chamber means into separate paper receiving sections each of said paper receiving sections having separate input openings coupled to a respective one of said conduit means outlets, said chamber divider means being perforated at least in part to allow air but not paper scraps to pass between the chamber sections;

air output opening means from said chamber means;

hopper means located at the underside of said chamber

means for gathering paper scraps from said chamber means; and

deflector means located in said chamber means between the chamber input openings and said air output opening means for deflecting received paper scraps to said hopper means while permitting air to pass to the chamber air output opening means.

4,484,844

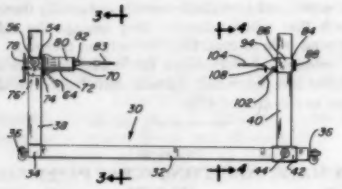
HORIZONTAL DRILL PRESS

Floyd G. Williams, Naturita, Colo., assignor to Kybato, Inc., Naturita, Colo.

Filed Jun. 1, 1982, Ser. No. 383,539

Int. Cl.³ B23B *49/00*

U.S. Cl. 408—82 **11 Claims**



1. A long reach horizontal drill press for drilling, tapping and reaming large holes in the surfaces of vehicles or equipment, the horizontal drill press comprising:

(a) a base support structure means mounted on a moving means whereby the structure means can be easily moved and positioned over a generally flat support surface, said support structure means includes a longitudinally extending beam having a cross beam transversely attached at one end and said moving means is attached to the free ends of the beams and arranged to provide minimum clearance between the support surface and the structure means whereby the support structure means is relatively stable to prevent tipping;

(b) a drill support column means mounted at one end of said structure means, said column means having a platform means slidably mounted on said column means, said platform means having means for mounting a drill motor for drilling large diameter holes in said vehicle or equipment, said drill support column means having means for adjusting the height of said platform means above said support structure means whereby the drill motor and drill bit mounted therein can be properly positioned for the drilling operation;

(c) a drill center column means mounted on said base support structure means and arranged to be longitudinally adjusted on said structure means with respect to said drill support column means, said center column means having a drill center support means with adjusting means mounted on said column means whereby the height of the drill center can be adjusted to properly position the drill center opposite the drill motor with respect to the work on which the drilling operation is to be performed; and

(d) means pivotably mounting at least one of said column means with respect to said base support structure means whereby the column can be moved from a first rigid upright position to a lowered second position where the column is arranged adjacent to said base support structure means so that the drill press can easily move under and into position on an object having a low clearance.

4,484,845

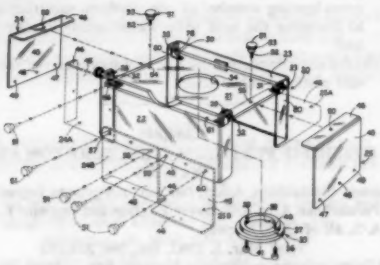
MACHINE TOOL SAFETY SHIELD

Andrew J. Pennella, Jr., Milford, Conn.; Lawrence S. Benjamin, New York, N.Y.; Adolph G. Bergman, Keene, N.H., and William R. Jahnke, Fairfield, Conn., assignors to Textron, Inc., Providence, R.I.

Filed Dec. 13, 1982, Ser. No. 448,968

Int. Cl.³ B23C *9/00*; B23Q *11/08*

U.S. Cl. 409—134 **19 Claims**



1. A safety shield for mounting to a machine tool which incorporates a non-rotating portion having a rotating cutting tool extending therefrom, said safety shield comprising:

(A) a support panel mounted to the non-rotating portion of the machine tool and incorporating

(1) aperture means for peripherally surrounding the rotating cutting tool, and

(2) fastening means mounted along at least one side edge of the support panel;

(B) a first panel pivotally mounted to the support panel;

(C) a second panel

(1) removably attached to the support panel,

(2) selectively securable to the support panel in a plurality of alternate orientations and positions for extending the zone of protection afforded thereby to conform to the particular needs of the user, and

(3) incorporating fastening alignment means formed therein along at least two sides thereof for cooperative interconnected engagement with the fastening means to assure secure mounting of the second panel to the support panel in any one of its selective positions; and:

(D) cooperating fastening means

(1) associated with the second panel and the support panel for securely mounting the second panel to the support panel in its alternate, selective positions, and

(2) constructed for rapid engagement and disengagement with the fastening means of the support panel and the fastening alignment means of the second panel,

whereby the second panel is quickly and easily mounted to the support panel in any one of a plurality of selective positions for effectively extending the zone of protection afforded by the support panel as required by the user.

4,484,846

ACTUATION OF A CARGO RESTRAINER

Hinrich Engel, Bremen, and Eckhard Koch, Lilienthal, both of Fed. Rep. of Germany, assignors to Vereinigte Flugtechnische Werke GmbH, Bremen, Fed. Rep. of Germany

Filed Dec. 29, 1981, Ser. No. 335,370

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048652

Int. Cl.³ B60P *7/08*; B61D *45/00*; B63B *25/22*

U.S. Cl. 410—69 **8 Claims**

1. An actuating device for a restraining member in the floor structure of aircraft load systems, the restraining member having a retracted position and a protracted position to provide a restraining action in one direction, the member permitting fold-down by load, when engaged in a direction opposite the restraining direction, comprising:

a manually operable lever;

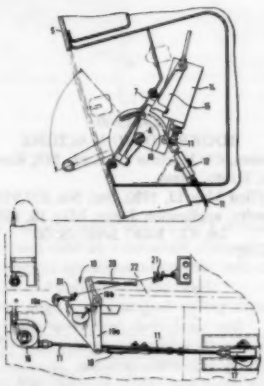
means for mechanically linking the lever to the member for causing its retraction underneath a conveyor plane defined by the floor structure;

spring means connected to the means for linking and being biased upon actuation of said manually operable lever for causing the means for linking and the manually operable lever to return, following release of the manually operable lever and corresponding to the protracted position of said restraining member to which it is being returned;

attenuating means for delaying the returning action by said spring and following release of the manually operable lever so that said member returns delayedly to the protracted position following said release; and

latch means for locking the member in the protracted position, the latch means being connected to the means for linking to be released upon actuation of the lever, the latch means unlocking when the member is engaged by a load in the direction opposite the restraining direction.

3. An actuating device for a restraining member in the floor structure of a cargo area of an aircraft, there being an aperture in the floor structure, the restraining member having a retracted position and a protracted position to provide a restraining action in one direction, the member permitting fold-down by load when engaged in a direction opposite the restraining direction, comprising:



a fork-like lever pivotally mounted in the aperture, the restraining member being pivotally mounted in between prongs of the fork;

a latch pivoted in the fork-like lever for preventing pivoting of the lever;

means mechanically linking the latch to the member for overriding latching when the member is engaged by a load from one side in said opposite direction;

a manually operable lever;

means for linking the manually operable lever to the latch in order to obtain unlatching followed by pivoting the fork-like lever;

means for operably linking the fork-like lever to the restraining member to obtain retraction of the restraining member as the fork-like lever is pivoted;

spring means connected to the means for linking and being biased upon actuation of said manually operable lever for causing the means for linking and the manually operable lever to return following release of the manually operable lever and corresponding to the protracted position of said restraining member to which it is being returned; and

attenuating means for delaying the returning action by said spring following release of said lever so that said member returns delayedly to the protracted position following said release.

8. An actuating device for a restraining member in a floor structure of a cargo area, the floor structure defining a conveyor plane, comprising:

a manually pivotable lever;

unidirectionally effective, attenuating means coupled to the lever and being loaded upon actuation of the lever, for a delayed return of the lever upon release thereof;

linkage means including cable means connected to the lever and rod means moved in one direction by the cable means upon actuation of the lever;

spring means coupled to the linkage means and being loaded upon said actuation, to move the rod means in the opposite direction and causing the lever to return upon release, said attenuating means delaying said return; and

said rod means being linked to said restraining member, causing said member to be retracted upon being moved in the one direction, and causing the member to be protracted upon being moved by the spring means in the opposite direction.

4,484,847

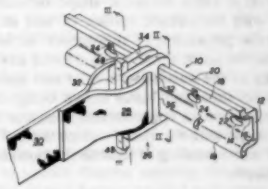
CARGO CONTROL TRACK AND FITTING

Paul M. Holmes, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Jun. 28, 1982, Ser. No. 392,545

Int. Cl.[3] **B61D** *45/00;* **B60P** *7/08*

U.S. Cl. 410—104 **9 Claims**

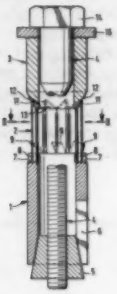


1. A cargo track and fitting system comprising, in combination, an elongated track including substantially parallel spaced flanges, each having a terminating edge, an outer surface and an inner surface, a flexible strap having a loop defined therein, a fitting mounted upon said loop, said fitting comprising a pair of side plates each having a loop receiving opening defined therein, a pair of hooks defined upon each side plate each extending over a track flange edge whereby tension within said strap forces said hooks against the associated flange inner surface, a keeper plate located between said side plates having a loop receiving opening defined therein, track engagable friction producing means defined upon said keeper plate, said keeper plate opening being related to said side plates openings such that tension within said loop tending to pull said side plates away from said track forces said keeper plate toward said track causing said friction producing means to engage said track.

4,484,848
EXPANSION DOWEL ASSEMBLY

Johann Ott, Vaduz, Liechtenstein, assignor to Hilti Aktiengesellschaft

Filed May 25, 1982, Ser. No. 381,784
Claims priority, application Fed. Rep. of Germany, May 27, 1981, 3121198
Int. Cl.³ F16B *13/06*
U.S. Cl. 411—24 **10 Claims**



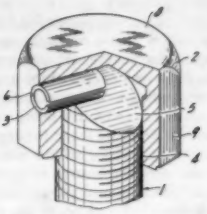
1. An expansion dowel assembly having a leading end and a trailing end with the leading end arranged to be inserted into a borehole or opening, comprising an expansion sleeve extending axially from the leading end toward the trailing end, a spacer sleeve extending axially from the trailing end toward the leading end, and a spacer member extending axially between the adjacent ends of said expansion sleeve and spacer sleeve, wherein the improvement comprises that said spacer member is a metal sleeve deformable radially outwardly from a first state to a second state, in the first state said metal sleeve having a transverse cross sectional shape different from a circular shape with the outside surface of said metal sleeve located within the projection of the outside surface of said spacer sleeve and the inside surface of said metal sleeve located radially inwardly of the outside surface of said spacer sleeve, and in the second state said metal sleeve being deformable radially outwardly into an approximately circular transverse cross sectional shape with the inside surface thereof having an inside diameter corresponding at least to the outside diameter of said spacer sleeve.

4,484,849
MULTIPLE PIECE BOLT-TYPE FASTENER

Jerome R. Klimowicz, 3827 W. LeGrande Blvd., 103N, Mequon, Wis. 53092

Continuation-in-part of Ser. No. 218,366, Dec. 19, 1980, Pat. No. 4,416,574, which is a continuation-in-part of Ser. No. 47,268, Jun. 11, 1979, Pat. No. 4,266,460. This application Feb. 9, 1981, Ser. No. 232,692
The portion of the term of this patent subsequent to May 12, 1998, has been disclaimed.
Int. Cl.³ F16B *23/00, 35/00*
U.S. Cl. 411—397 **7 Claims**

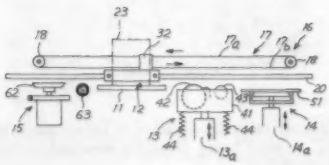
1. A bolt-type fastening unit, comprising a threaded shank having an inclined end surface extended completely across said shank, a drive nut having a base wall and a threaded axial opening from the base to substantially the entrance to said axial opening, said nut being threaded onto said shank with said base wall adjacent the outermost end of said shank, said nut having equicircumferentially spaced side wall openings located in alignment with the axially inner portion of said inclined end surface and spaced from the axially outermost entrance end, at least one of said openings extending across and inwardly toward said end surface with said base wall of said nut adjacent said shank, and an interlocking pin fixedly extending through one of said exposed openings and terminating within the nut with the inner end in abutting engagement with said end surface, said inner pin end having an end complementing said inclined end surface.



4,484,850
BOOKBINDING MACHINE

Masaaki Shimizu, c/o Horizon Co., Ltd., 510, Kuze Oyabu-cho, Minami-ku, Kyoto, Japan

Filed May 13, 1982, Ser. No. 377,919
Claims priority, application Japan, May 18, 1981, 56-72178
Int. Cl.³ B42C *5/00, 19/00*
U.S. Cl. 412—11 **6 Claims**



1. A bookbinding machine comprising: a clamper for clamping a book comprising a plurality of piled sheets of paper or the like to be bound; means for reciprocating said clamper along a predetermined path consisting of a first portion extending on one side of a reference position and a second portion extending on the opposite side of said reference position; an adhesive applicator disposed on said first portion of said path for applying adhesive to the back of said book; a cover sheet applicator disposed on said first portion of said path for adhering a cover sheet onto said back to which adhesive has been applied by said adhesive applicator; a milling device disposed on said second portion of said path for cutting and roughening the back of said book; means for controlling said reciprocating means so that upon completion of reciprocal movement of said clamper along said second portion of said path, said clamper is reciprocated along said first portion of said path; and means disposed at said reference position for adjusting the level of said back of said book to conform to that of the plane of operation of said adhesive applicator as said clamper carries said book from said second to said first portion of said path.

4,484,851
APPARATUS FOR LIFTING A WHEELCHAIR ONTO THE ROOF OF AN AUTOMOBILE

David Gottlieb, 15 Devorah Hanevia St., and Eliezer Zer, 6 Amos St., both of Bnei Brak, Israel

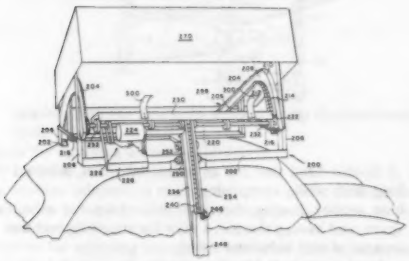
Continuation of Ser. No. 211,913, Dec. 1, 1980, Pat. No. 4,440,540, which is a continuation-in-part of Ser. No. 880,572, Feb. 23, 1978, Pat. No. 4,236,860. This application Sep. 30, 1982, Ser. No. 428,628

Claims priority, application Israel, Feb. 24, 1977, 51534; Apr. 1, 1979, 56986

The portion of the term of this patent subsequent to Dec. 2, 1997, has been disclaimed.

Int. Cl.³ B60R 9/04

U.S. Cl. 414—462 13 Claims



1. A device for selectively positioning a mobility aid appliance for an invalid onto an automobile comprising:

(a) a fixed support apparatus mountable onto the roof of an automobile and defining a fixed track;

(b) an axle arranged for rotational rolling engagement with said track and movement therealong; and

(c) a mobility aid appliance support shaft means defining first and second ends, said first end being rotatably mounted onto said axle, and said second end being associated with said mobility aid appliance for support thereof, wherein said shaft means comprises:

(i) first and second elongate shaft elements, arranged for telescoping relative motion, said first shaft element being rotatably mounted onto said axle and defining a bearing surface for engagement by said second shaft element;

(ii) an endless movable chain loop coupled to said axle and disposed within said first shaft element;

(iii) first and second sprocket members disposed in said first shaft element and engaging said endless movable chain loop, said first sprocket member being fixedly mounted onto said axle;

(iv) a mounting pin fixedly associated with said chain for motion together therewith; and

(v) means for attaching said second shaft element to said mounting pin for movement relative to said first shaft element in response to rotation of said axle for providing extension and retraction of said shaft means, said means for attaching being operative for retaining said first and second shaft elements in at least partially nested relationship, whereby said second shaft means is selectively pivoted about said bearing surface of said first shaft element.

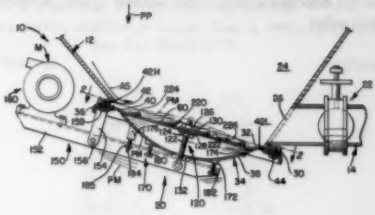
4,484,852
HOPPER BOTTOM UNIT

Arthur I. Anderson, St. Paul, Minn., assignor to North American Car Corporation, Chicago, Ill.

Continuation of Ser. No. 137,438, Apr. 3, 1980, abandoned. This application Apr. 19, 1982, Ser. No. 369,803

Int. Cl.³ B60P 1/00; B65G 69/06

U.S. Cl. 414—525 A 6 Claims



1. In a hopper for discharging fluent material, said hopper having an outlet port, an opening at the bottom of said hopper, said opening being defined by a lip located in a plane that is slanted at an angle with respect to the horizontal, the lowest point of said lip being located subjacent to said outlet port and the highest point of said lip being located across said opening opposite and spaced from said outlet port, wherein the improvement comprises a discharge unit comprising:

a casing with an integral attaching flange on a circumferential edge thereof;

means for attaching said edge of said casing to said lip circumjacent said opening such that said discharge unit is attached to said hopper independently of and spaced from said outlet port;

a planar plate mounted within said casing and tilted at said angle and sloping toward said outlet port;

a plurality of spaced elongated, longitudinally curved projections mounted on the top surface of said plate so as to define a riffle-like pattern thereon, each of said projections including a ramp ascending toward said outlet port from said plate and a rear leg that is sloped upwardly from said plate away from said outlet port such that said projections are triangular in transverse cross-section; and

a vibration producer, means connecting said producer to said plate and projections to cause said plate and projections to pulsate thereby assisting the movement of fluent material in said hopper toward said outlet port.

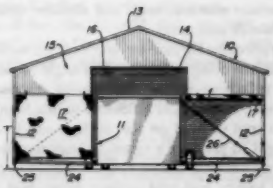
4,484,853
SHELTER CARRIAGE SYSTEM

Bernard Desourdy, 545 de Normandie St., Longueuil, Canada J4H 3P6

Filed Dec. 14, 1981, Ser. No. 330,081

Int. Cl.³ B60P 1/52; E04B 1/72

U.S. Cl. 414—534 8 Claims



1. A shelter carriage system comprising a vehicle body defining a pair of opposite lateral sides, arms having each an

inner end pivoted to the lower section of the vehicle body on the opposite lateral sides thereof to allow operative outward deployment of said arms relative to the lateral sides and having each an outer end forming a seat constructed and arranged to upwardly engage against a lateral sill of an overlying shelter to support the latter, and a brace collapsably connecting the outer end of each of said arms to the corresponding lateral side at the upper section of said vehicle body and means to operatively adjust the effective length of each of said braces independently of each other.

4,484,854

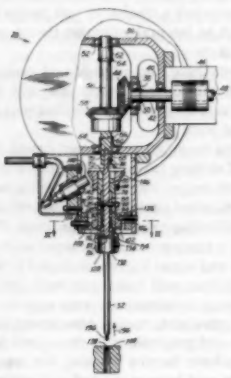
ROBOTIC HEIGHT SENSOR IN LATERALLY COMPLIANT PROBE

Anwar Chitayat, Northport, N.Y., assignor to Anorad Corporation, Hauppauge, N.Y.

Filed Aug. 16, 1982, Ser. No. 408,169

Int. Cl.³ B25J *7/00, 19/00*

U.S. Cl. 414—730 **3 Claims**



1. A robotic device having position control in at least one axis, comprising:

a control head;

an affector extending from said control head parallel to said axis;

means for permitting rotation of said affector about said axis;

means for permitting displacement of said affector along said axis with respect to said control head in response to contact between said affector and an external object;

a conical surface movable with said affector symmetrically disposed about said axis;

a diffusely reflective surface on said conical surface;

said conical surface being disposed at an angle to said axis; and

an optical reflective sensor stationarily disposed in said control head, said optical reflective sensor being effective to focus a spot of light on said surface and to detect said spot of light to produce a signal in response there-to, said signal being variable with a distance between said optical reflective sensor and said surface when said affector is displaced along said axis by contact with an external object whereby said signal is related to said displacement along said axis and to a function of said angle.

4,484,855

DOUBLE-HAND UNIT

Hajimu Inaba, Hino; Shinsuke Sakakibara, Kunitachi, and Ryo Nihei, Musashino, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

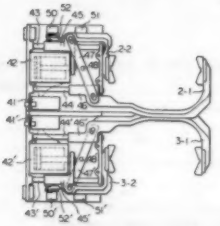
PCT No. PCT/JP81/00265, § 371 Date Jun. 4, 1982, § 102(e) Date Jun. 4, 1982, PCT Pub. No. WO82/01153, PCT Pub. Date Apr. 15, 1982

PCT Filed Oct. 7, 1981, Ser. No. 387,881

Claims priority, application Japan, Oct. 8, 1980, 55-142630[U]

Int. Cl.³ B25J *15/00*

U.S. Cl. 414—736 **3 Claims**



1. A double-hand unit for an industrial robot, adapted for handling shaft work, comprising:

a base section having therein a thin elongated mounting space, and having thereon a joint for attaching said unit to an arm of said industrial robot;

two hand units individually operatively mounted on said base section, each said hand unit comprising an outer finger extending outward from said base section and an inner finger disposed outside and adjacent to said base section, said outer and inner fingers of each hand unit defining therebetween a gripping cavity having an opening;

finger drive means comprising two finger drive mechanisms arranged side by side in said mounting space, each arranged to drive a respective associated hand unit, each said drive mechanism comprising a pair of parallel guide rods, one having slideably mounted thereon said inner finger of said associated hand unit and the other having slidably mounted thereon said outer finger of said associated hand unit, and air cylinder mechanism arranged between said pair of parallel guide rods and operatively connected to one of said fingers, and a centrally pivoted link plate having one end connected to said inner finger and the other end connected to said outer finger, said link plate being arranged to cause said inner and outer fingers to slide in opposite directions on said guide rods and thereby cause closing and opening of said fingers upon actuation of said air cylinder mechanism; and

said two hand units being disposed in back-to-back relationship whereby said outer fingers are positioned adjacent to each other and said gripping cavity openings are directed in opposite directions from one another.

4,484,856

CONTAINMENT STRUCTURE

Angelo M. Patacca, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 21, 1981, Ser. No. 332,697

Int. Cl.³ F01D *21/00*

U.S. Cl. 415—9 **8 Claims**

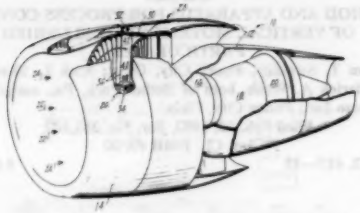
1. A flexible casing for blocking the movement of particles originating in the axially extending flow path of a gas turbine engine, the particles having a radial component of velocity, which comprises:

a fabric including

a plurality of layers of material which are adapted to extend circumferentially about the axially extending flow path each layer having a first end and a second end,

a first ribbon of material attached to a pair of layers at the first ends of the pairs of layers the first ribbon having a first strip and a second strip spaced from the first strip leaving a gap therebetween and,

a second ribbon of material attached to a pair of layers of material at the second ends of the pair of layers, the second ribbon having a first strip and a second strip



spaced from the first strip leaving a gap therebetween; and,

means for applying a load to the fabric

which includes

a first bar adapted to engage the strips of the first ribbon and a second bar adapted to engage the strips of the second ribbon, and

means for applying more than one level of tension to the fabric by bringing the bars closer together by a preselected amount which engages the first bar and the second bar and which extends through the gaps between the strips.

4,484,857

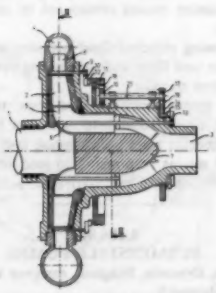
BLADED TURBINE PUMP WITH ADJUSTABLE GUIDE VANES

Pierre Patin, 15 rue Buffon, 75005 Paris, France

Filed Sep. 21, 1982, Ser. No. 420,625

Int. Cl.³ F01D *17/00*

U.S. Cl. 415—146 **8 Claims**



1. A turbine pump comprising a rotor (1) having rotor blades (2), an inlet pipe (3), an outlet casing (4), inlet guide blades (5) disposed between said inlet pipe and said rotor, outlet guide blades (8) disposed between said rotor and said outlet casing, said inlet guide blades and said outlet guide blades being pivotable, and automatic control means to control the pivoting of said inlet guide blades, wherein said automatic control means is in turn controlled by the pivoting of the outlet guide blades and wherein the angle of the pivoting of said outlet guide blades is controlled by the fluid pressure acting on said outlet guide blades.

4,484,858

TURBINE ROTOR WITH MEANS FOR PREVENTING AIR LEAKS THROUGH OUTWARD END OF SPACER

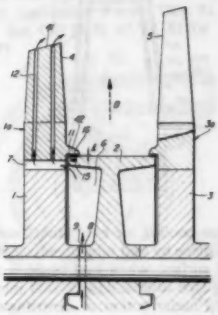
Soichi Kurosawa; Katsuo Wada, and Mitsuo Teranishi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 1, 1982, Ser. No. 445,979

Claims priority, application Japan, Dec. 3, 1981, 56-193696

Int. Cl.³ F01D *5/06*

U.S. Cl. 416—95 **3 Claims**



1. A rotor comprising:

a plurality of turbine discs each having a blade secured to an outer periphery of a turbine wheel;

a spacer means mounted between two adjacent discs, said turbine discs, said spacer means and turbine shafts being assembled to form a turbine rotor; and

means for preventing a leakage of air through an outer end of said spacer means of air flowing through an interior of said rotor to cool said blades, said means for preventing includes an annular projection formed on an axial end surface of each of said discs, said annular projecting extending axially toward said spacer means in such a manner that an inner annular surface of said annular projection is located in a superposed relationship to an outer cylindrical surface of said spacer means adjacent thereto, a circumferential groove formed in said outer cylindrical surface of said spacer means facing said inner annular surface of said annular projection, and a sealing means mounted in said circumferential groove for sealing a gap between said outer cylindrical surface of said spacer means and said inner annular surface of said annular projection under an action of centrifugal forces during an operation of said rotor.

4,484,859

ROTOR BLADE FOR A GAS TURBINE ENGINE

George Pask, Stanton-by-Bridge; John H. R. Sadler, Aston-on-Trent, and John F. Coplin, Duffield, all of England, assignors to Rolls-Royce Limited, London, England

Continuation of Ser. No. 218,453, Dec. 19, 1980, abandoned. This application Dec. 13, 1982, Ser. No. 449,530

Claims priority, application United Kingdom, Jan. 17, 1980, 8001657

Int. Cl.³ F01D *5/18*

U.S. Cl. 416—96 A **6 Claims**

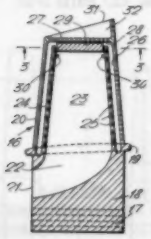
1. A blade for a rotor of a gas turbine engine, said blade having a longitudinal axis and being subjected to a centrifugal force in a direction along said longitudinal axis when rotating, said blade comprising:

a hollow aerofoil portion having a closed blade tip at one end and a shank portion at the other end, said closed blade tip having an internal surface extending across the direc-

tion of centrifugal force experienced by the blade during operation;

a cooling air entry tube positioned within said hollow aerofoil portion of said blade and extending longitudinally thereof in spaced relationship therewith from said shank portion toward said blade tip and terminating in a tube tip short of said internal surface of said blade tip; and

a weight comprising a ceramic material having a low mass and a low coefficient of friction for providing damping without said tip of said hollow aerofoil portion being



locked to said cooling air entry tube, said weight being supported in place by said tube tip adjacent to but short of said internal surface when said blade is stationary, said weight being free to bear against said internal surface of said blade tip under action of centrifugal force so that when said aerofoil portion of said blade and said air entry tube vibrate relative to each other, sliding frictional movement takes place between said weight and said internal surface of said blade tip to simultaneously provide damping of vibration of both said aerofoil portion of said blade and said air entry tube.

4,484,860

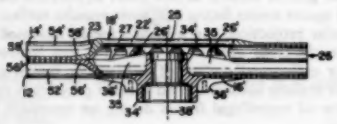
RADIAL TUBE CENTRIFUGAL FAN

David L. Brenholt, Menomonie, Wis.; Paul M. Fischer, Apple Valley, Minn., and Kenneth V. Mattson, Menomonie, Wis., assignors to Donaldson Company, Inc., Minn.

Filed May 17, 1982, Ser. No. 379,256

Int. Cl.³ F04D *29/20*

U.S. Cl. 416—182 **3 Claims**



3. A radial tube centrifugal fan comprising:

a planar backing plate having an upper surface and a lower surface, and having an axis of rotation perpendicular to said plate, and a perimeter;

first means defining an entry port mounted in spaced relation to and in a plane parallel to said backing plate; and

means for mounting a plurality of radially extending tube means between said first means and said backing plate for drawing a fluid through said port and outwardly through said tube means during rotation of said fan about said axis of rotation in a preferred direction, said tube means each being of generally circular cross section and extending radially outwardly from said perimeter of said backing plate, said tube means each being of a diameter substantially equal to the distance between said backing plate and said entry port, and each said tube means having an end between said plate and said port;

said backing plate having an opening located coaxial with said axis of rotation of said backing plate; and said backing plate having mounting means including a collar surrounding said opening on said backing plate for mounting said fan to a rotational power source; and

a plurality of radially extending inner reinforcement ridges each having an inner terminus, said ridges lying on and rising above said upper surface of said backing plate, and terminating in said collar, said collar being continuous with said inner terminus of said inner reinforcement ridges, said inner reinforcement ridges extending radially outwardly at least to said perimeter of said backing plate.

4,484,861

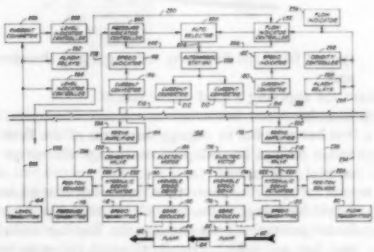
METHOD AND APPARATUS FOR PROCESS CONTROL OF VERTICAL MOVEMENT OF SLURRIED PARTICULATES

William T. Sweeney, Ponca City, Okla.; Rick L. Shaw, and Frederick A. Webb, both of Bethel Park, Pa., assignors to Conoco Inc., Ponca City, Okla.

Filed Feb. 22, 1982, Ser. No. 351,102

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—15 **6 Claims**



1. Apparatus for moving fluid substance vertically through a defined flow way extending from a first level to a second level comprising:

pump means disposed at said first level receiving fluid input and directing output fluid flow through a slurry line to said flow way;

a prime mover providing output rotation;

variable speed drive means coupling said rotation to drive said pump means and including a speed adjustment input;

hydraulic actuator means connected to said speed adjustment input;

means for sensing selected fluid pressure and flow rate parameters for said flow and generating respective first and second output signals;

auto selector means receiving said respective first and second output signals and responsive to the lowest value signal to generate a set point signal; and

servo control means responsive to said set point signal to control positioning of said hydraulic actuator means.

4,484,862

SUBMERSIBLE PUMPS

Borge R. Jensen, Brussels, Belgium, assignor to Grundfos A/S, Bjerringbro, Denmark

Filed Mar. 29, 1982, Ser. No. 362,650

Claims priority, application United Kingdom, Apr. 9, 1981, 8111180

Int. Cl.³ F04B *49/02, 49/06*

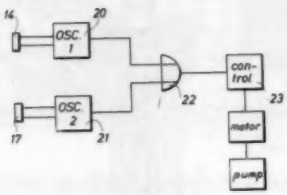
U.S. Cl. 417—36 **1 Claim**

1. Apparatus for controlling the operation of a cellar drainage pump, including

(a) piezo-electric level detecting means which comprises a circular cylindrical plastic housing having a recess and a cavity, also of circularly cylindrical configuration, a membrane arranged in said recess to close said cavity, with a

first face of said membrane serving to sense a fluid level and thereby derive an electrical signal, a piezo-electric body with such circularly cylindrical configuration mounted on said membrane with said piezo-electric body being mounted on a second face of said membrane inside said cavity and capable of translational oscillation along an axis lying substantially perpendicular to said membrane,

(b) control circuitry means, including a first electrical conductor connected to said control circuitry means and to one end of said piezo-electric body, and a second electrical conductor connected to said control circuitry means and



to the other end of said piezo-electric body by way of said membrane, and

(c) switching means for said pump so as to enable said piezo-electric level detecting means to sense by acoustic impedance transitions, the presence or absence of liquid adjacent to said detecting means;

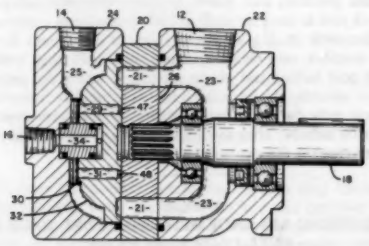
said detecting means being electrically connected to said control circuitry means; said control circuitry means being electrically connected to said switching means for controlling said switching means, and said detecting means being mounted in a recess on the outer casing of said pump.

4,484,863

ROTARY VANE PUMP WITH UNDERVANE PUMPING AND AN AUXILIARY OUTLET

Wayne H. Pagel, Minneapolis, Minn., assignor to Hydraulic Services Inc., Minneapolis, Minn.

Filed Oct. 5, 1981, Ser. No. 273,221
Int. Cl.³ F04B 23/10; F04C 2/00, 15/00
U.S. Cl. 417—204 **6 Claims**



1. In a rotary vane pump of the type having radially slidable vanes in a rotor, said vanes being urged against an eccentric chamber around said rotor and being forced outwardly during an intake phase of rotation by liquid pressure coupled to the inner vane ends through first passages through a floating cheek plate coupled to a discharge chamber during said intake phase, the improvement in secondary pump pressure outlets during a pressure discharge phase of rotor rotation comprising

(a) at least one secondary passage in said cheek plate positioned to flow communicate with a plurality of said inner vane ends during said pressure discharge phase;

(b) a secondary liquid conduit tube passing through said discharge chamber in said pump connected to said secondary passage in said cheek plate; and

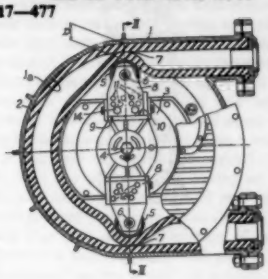
(c) a secondary outlet on said pump connected to said secondary liquid conduit tube.

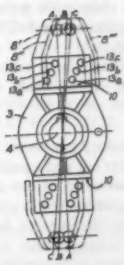
4,484,864

PERISTALTIC PUMP

Raymond Michel, Juvisy sur Orge, France, assignor to Delasco, Paris, France

Filed Dec. 22, 1982, Ser. No. 452,334
Claims priority, application France, Dec. 31, 1981, 81 24613
Int. Cl.³ F04B 43/12, 45/08
U.S. Cl. 417—477 **2 Claims**





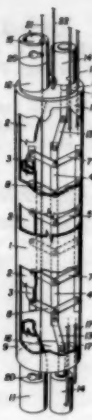
1. A peristaltic pump comprising a stator, an elastically deformable tube placed along a supporting surface of the stator and a rotor provided with a plurality of evenly distributed members designed to crush the tube against said supporting surface, each of said crushing members being coupled to the rotor by way of an element for adjusting the radial distance between said crushing member and the axis of rotation of the rotor, whereas said element for adjusting each crushing member is a support for a pivoting axle of said member, which support is provided with a reference surface held in contact with a reference surface of the rotor, parallel to the rotation axis of the rotor and substantially perpendicular to the radius joining the pivoting axle of the crushing member to said rotation axis, and whereas at least a first plurality of orifices is provided in the rotor and at least a second plurality of orifices, differently positioned, is provided in said support, selected ones of the orifices of the first plurality being optionally disposed over a selected one of the orifices of the second plurality of orifices by moving the support with respect to the rotor along said reference surfaces, the two coinciding orifices receiving a connecting member which traverses them in order to secure the support on the rotor in the selected position of adjustment.

4,484,865

FLUID PUMP FOR USE DOWN A WELL

John P. Spacer, Box 127, Sandia Park, N. Mex. 87047

Filed May 23, 1983, Ser. No. 496,963
Int. Cl.³ F04B 47/08
U.S. Cl. 417—478 5 Claims



1. A fluid pump for use down a well casing comprising:

a pump shell sized to slide inside a well casing, and

a flexible bladder approximately half the inside diameter of the pump shell, and

an arcuate squeeze plate whose arcuate width is approximately one quarter of the inside circumference of the pump shell, and

a drive rod, and

a plurality of toggle linkages, wherein each toggle linkage is comprised of a rocker bar and a push bar, and wherein the flexible bladder is attached on one side to the pump shell inner surface, and wherein the flexible bladder is attached on its other side to the convex surface of the arcuate squeeze plate, and wherein each rocker bar is pivotally connected on one end to the inner surface of the pump shell diametrically opposite to where the flexible bladder is attached to the pump shell, and wherein the other end of the rocker bar is pivotally attached to the drive rod, and wherein each push bar is pivotally attached to the drive rod on one end, and the other end of each push bar is pivotally attached to the concave surface of the arcuate squeeze plate, and wherein the combined length of the push bar and the rocker bar is such as to sufficiently squeeze the flexible bladder against the pump shell, and

two one way fluid check valves, each connected to one end of the flexible bladder, and oriented so that one check valve permits fluid to enter the flexible bladder, while the other check valve only permits fluid to leave the flexible bladder, and

a clevis being pivotally connected on one end of the drive rod and on the other end to a means for providing power to the drive rod, and said means including hydraulic cylinders

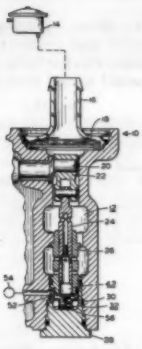
two end caps which are mounts for the check valves and hydraulic cylinders and through which fluid may pass into the flexible bladder through one of the check valves, and through which the hydraulic lines and the line to the surface for the pumped fluid may pass.

4,484,866

PISTON PUMP

Dean E. Runkle, LaPorte, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 2, 1983, Ser. No. 500,516
Int. Cl.³ F04B 7/04
U.S. Cl. 417—495 7 Claims



1. A piston pump comprising a housing with an opening therein in communication with a reservoir, a cylinder fixedly disposed within the opening and including a bore, a piston member extending into the cylinder bore and cooperating with the housing and cylinder to substantially define a variable volume chamber selectively communicating with the reservoir in response to movement of the piston member, the variable volume chamber communicating with an accummulator via a first check valve means whereby fluid pressure generated in the variable volume chamber is communicated to the accumulator via the first check valve means, characterized in that said piston member includes a central passage therein communicating the reservoir with the variable volume chamber via a second check valve means disposed in said central passage, said piston member including at least one aperture leading to said central passage, said cylinder defining a first port and a second port extending from the opening to the bore to communicate the reservoir with the latter, said piston member is movable within the cylinder bore from a rest position to an extended position, said piston aperture communicating with said first port in the rest position and remaining in communication therewith during an initial stage of movement for said piston member, said piston aperture communicating with said second port before said piston member reaches the extended position whereby the variable volume chamber is closed to the reservoir only during an intermediate stage of movement for said piston member after the initial stage and before said piston member reaches the extended position.

4,484,867

MOUNTING ARRANGEMENT FOR FUEL RACK IN FUEL INJECTION PUMP

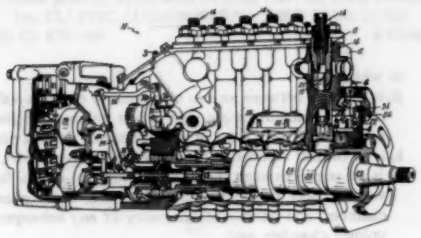
John A. Kimberley, East Granby, Conn.; John B. Cavanaugh, West Springfield, and Richard D. Kraus, Chicopee, both of Mass., assignors to Ambac Industries, Incorporated, Springfield, Mass.

Filed Feb. 17, 1983, Ser. No. 467,557
Int. Cl.³ F04B 7/04
U.S. Cl. 417—499 7 Claims

1. In a fuel injection pump including a pump housing, at least one injection barrel inserted in said pump housing, a respective pump piston positioned in each said at least one injection barrel, a cavity provided in said pump housing, an elongated fuel rack extending transversely of said at least one pump piston within said housing cavity, means connecting said fuel rack

with each said at least one pump piston for altering its angular position in its injection barrel upon longitudinal displacement of said fuel rack for changing the effective delivery stroke of said pump piston, the improvement comprising:

at least two lever arms, each said lever arm being pivotally mounted to said pump housing at a respective primary pivot, the axes of said primary pivots being parallel to and



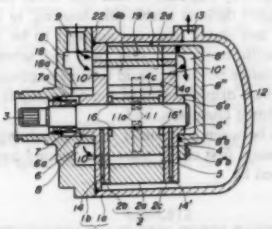
spaced from one another, each said lever arm also being pivotally connected to said fuel rack at respective secondary pivots to pivotally support said fuel rack, the axes of said secondary pivots being parallel to and spaced from said primary pivot axes and, at least longitudinally of said fuel rack, from one another, at least one of said levers being reciprocably actuable about its said primary pivot axis thereby to longitudinally reciprocate said fuel rack.

4,484,868

VANE COMPRESSOR HAVING IMPROVED COOLING AND LUBRICATION OF DRIVE SHAFT-SEAL MEANS AND BEARINGS

Tsunenori Shibuya, and Masahiro Iio, both of Konan, Japan, assignors to Diesel Kiki Co. Ltd., Tokyo, Japan

Filed May 5, 1983, Ser. No. 491,859
Claims priority, application Japan, May 12, 1982, 57-79631
Int. Cl.³ F04C *18/00, 29/02*
U.S. Cl. 418—15 **10 Claims**



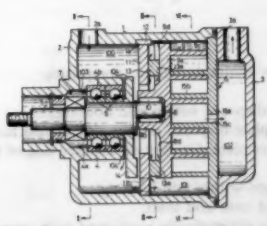
1. A vane compressor comprising: a cam ring having an endless camming inner peripheral surface and opposite ends; front and rear side blocks secured to said opposite ends of said cam ring and forming a pump housing in cooperation with said cam ring, said pump housing having at least one pump inlet and at least one pump outlet; a cylindrical rotor accommodated within said pump housing and having an outer peripheral surface thereof formed with a plurality of slits; a plurality of vanes radially slidably fitted in said slits of said rotor for sliding on said endless camming inner peripheral surface of said cam ring, adjacent ones of said vanes cooperating with said pump housing and said rotor to define therebetween pump working chambers communicating with said pump inlets or said pump outlet; a front head secured to said front side block; a drive shaft partly disposed in said pump housing and supporting said rotor; a covering cooperating with said front head to form a compressor casing, said compressor casing having a suction port and a discharge port formed therein, said suction port communicating with said at least one pump inlet of said pump housing, said discharge port being disposed for communication with said at least one pump outlet of said pump housing; a sealing chamber defined by said front head and said front side block; a drive shaft-seal means arranged in said sealing chamber and fitted on said drive shaft in a gastight manner; a suction chamber defined by said front head and said front side block and disposed around said sealing chamber, said suction chamber communicating with at least one of said pump working chambers on a suction stroke thereof through said at least one pump inlet; a front plain bearing provided at said front side block and radially supporting said drive shaft, said front plain bearing having an end portion remote from said rotor disposed in said sealing chamber; a first passage means communicating in a direct manner said suction port with said sealing chamber to introduce suction refrigerant having low pressure and low temperature into said sealing chamber; a partition member secured to an end face of said rear side block remote from said rotor and cooperating with said rear side block to define a rear suction chamber therebetween, said rear suction chamber communicating with at least one of said pump working chambers through said at least one pump inlet; a rear plain bearing provided at said rear side block and radially supporting said drive shaft, said rear plain bearing having an end portion remote from said rotor disposed in said rear suction chamber; and a second passage means communicating in a direct manner said suction port with said end portion of one of said plain bearings formed in said rear side block remote from said rotor to guide suction refrigerant to said end portion of said one plain bearing.

4,484,869

VOLUMETRIC FLUID COMPRESSOR

Shozo Nakayama, Kariya; Mitsukane Inagaki, Anjo; Shigeru Suzuki, Nishio, and Takashi Ban, Obu, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Apr. 21, 1982, Ser. No. 370,307
Claims priority, application Japan, Apr. 24, 1981, 56-62938
Int. Cl.³ F04C *18/02, 29/02*
U.S. Cl. 418—55 **7 Claims**



1. A volumetric fluid compressor comprising,

a housing having a suction chamber with a suction port, and a discharge chamber therein;

a rotary shaft rotationally mounted in the center of the housing, said rotary shaft having an offset shaft at one end inside the housing,

a fixed scroll member situated inside the housing and having a helical portion extending inwardly therefrom,

a movable scroll member situated inside the housing so that the movable scroll member can move in all directions in a plane perpendicular to the axis of the housing but can not rotate relative to the housing, said movable scroll member being rotationally engaged with the offset shaft and having a helical portion meshing with the helical portion of the fixed scroll member so that when the rotary shaft is rotated, fluid introduced into the housing through the

suction chamber is compressed by the helical portions of the fixed and movable scroll members and is discharged from the discharge chamber,

a boss portion integrally formed with the housing and situated in the suction chamber of the housing, said boss portion having a side portion facing substantially perpendicular to the axis of the housing and an inlet opening perpendicular to the side portion, said inlet opening directly facing and axially aligned with the suction port of the housing so that the fluid introduced into the suction chamber can smoothly enter into the inlet opening,

bearing means situated inside the boss portion downstream of the inlet opening for rotationally supporting the rotary shaft, and

a balance weight connected to the rotary shaft adjacent to the boss portion so that a gap is formed between the balance weight and the side portion of the boss portion, whereby when the fluid is compressed by the scroll members, the fluid passes through the inlet opening of the boss portion, the bearing means and the gap to thereby continuously lubricate the bearing means.

4,484,870

PLANETARY HYDRAULIC MOTOR WITH IRREGULARLY ARRANGED VALVING PARTS

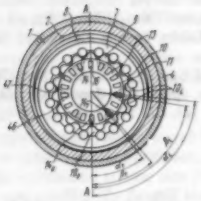
Fedor N. Erasov, Odessa, U.S.S.R., assignor to Zaporozhsky Konstruktorskotekhnologichesky Institut Selskokhozyaistvennoco Mashinostroenia, U.S.S.R.

PCT No. PCT/SU81/00024, § 371 Date Jan. 4, 1982, § 102(e) Date Jan. 4, 1982

PCT Filed Mar. 2, 1981, Ser. No. 336,373

Int. Cl.³ F03C 2/00

U.S. Cl. 418—61 B **14 Claims**



1. A planetary hydraulic motor, comprising

a housing,

a stator gear disposed within said housing,

a first cover plate disposed on one side of said housing,

a second cover plate disposed on another side of said housing,

a shaft disposed within said housing,

a gear secured onto said shaft,

a ring member eccentrically positioned with respect to said shaft,

an outer set of teeth disposed on said ring member and adapted to meshingly engage said stator gear,

an inner set of teeth disposed on said ring member and adapted to meshingly engage said shaft gear,

a plurality of volume chambers, each volume chamber being defined by said shaft gear and said inner set of teeth, said volume chambers adapted to receive operating fluid and to discharge the same therefrom,

a wear plate secured onto said shaft to define one side of each of said volume chambers,

means for supplying the operating fluid into said volume chambers, comprising

a distributor secured onto said shaft to define another side of each of said volume chambers,

a control valve disposed on said second cover plate, said distributor and control valve adapted to contact one another along working surfaces thereof, and

a plurality of valving ports disposed on the working surface of said distributor at an angular pitch determined by

$$\beta_i = \frac{2\pi k_i + \alpha_i}{n_1}$$

in which

β_i is an angle between an axis of symmetry of a first valving port communicating with a first volume chamber, and an axis of symmetry of any subsequent valving port,

k_i is an ordinal number of the subsequent valving port,

α_i is an angle between the axis of symmetry of the first valving port communicating with the first volume chamber, and an axis of symmetry of any subsequent volume chamber, and

n_1 is a number of cycles effected in said volume chamber for one revolution of said shaft, determined by

$$n_1 = \frac{z_1 \cdot z_3}{z_3 + z_2 (z_4 - z_3)} + 1$$

in which

z_1 is a number of teeth on said shaft gear,

z_2 is a number of teeth on said inner set of teeth disposed on said ring member,

z_3 is a number of teeth on said outer set of teeth disposed on said ring member, and

z_4 is a number of teeth on said stator gear,

an annular chamber defined between an inner surface of said second cover plate and an end face of said control valve, said annular chamber adapted to be filled with operating fluid to provide an effort for urging said control valve against the working surfaces of said distributor during any rotation of said shaft,

an inlet passageway disposed in said first cover plate, and

an inner chamber defined within said housing, in which

said housing and stator gear are adapted to be angularly displaced with respect to said first and second cover plates, to change position of said inlet passageway and for adjusting phase displacement of the operating fluid entering said volume chambers, and

a relationship between a diameter of the mounting surfaces of said housing, first cover plate, and second cover plate, is determined by

$$Dpf\pi (D^2 - d^2) \geq \frac{M}{\delta \cos \alpha}$$

in which

D is a diameter of the mounting surfaces of said housing and said first and second cover plates,

p is a pressure of the operating fluid within said inner chamber of said housing,

f is a sliding friction coefficient of said first cover plate,

d is an inner diameter of the mounting surface of said control valve,

M is a torque developed by said motor, and

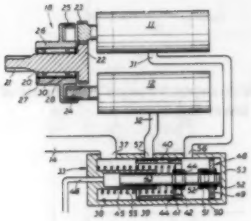
α is an angle of inclination of a vector force arising from the effect of pressure of the operating fluid acting upon said first and second cover plates.

4,484,871

TORQUE DELIVERING TOOL WITH DUAL MOTOR DRIVE

Nils G. Adman, Huddinge, and Rolf A. Jacobsson, Johanneshov, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Nov. 18, 1982, Ser. No. 442,739
Claims priority, application Sweden, Nov. 23, 1981, 8106937
Int. Cl.³ F01C 13/02; B23Q 5/06; B25B 17/00, 21/00
U.S. Cl. 418—69 8 Claims



1. In a screw joint tightening tool, comprising a primary motor (11) for accomplishing at high speed a low torque initial tightening of a screw joint to be tightened, a secondary motor (12) for accomplishing at low speed a high torque final tightening of the joint, and a power train (18, 19) for transferring the power of said primary motor (11) and of said secondary motor (12) to an output spindle (17) connectable to the screw joint to be tightened,

the improvement wherein:

said first and second motors (11,12) are arranged side-by-side, and

said power train (18, 19) comprises a drive coupling and reduction gearing mechanism which includes:

a main shaft (20) continuously connected to said primary motor (11),

a drive sleeve (26) journalled on said main shaft (20) and being provided with an internal gear (25),

a spur gear (24) on said secondary motor (12), said spur gear (24) being continuously connected to said internal gear of said drive sleeve (26) to continuously couple said drive sleeve (26) to said secondary motor (12), and

a one-way free-wheeling clutch (30) interconnecting said drive sleeve (26) and said main shaft (20) during said low speed final tightening of the joint.

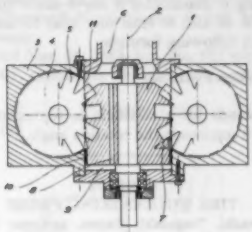
4,484,872

GLOBOID-WORM MACHINE WITH TAPERED SCREW CLEARANCE NEAR HIGH PRESSURE END SEAL

Akira Ohtsuki, Nagaokakyo, Japan, assignor to Omphale S.A., Puteaux, France

Filed Jan. 11, 1983, Ser. No. 457,216
Claims priority, application France, Jan. 14, 1982, 82 00500
Int. Cl.³ F01C 1/24; F04C 27/00
U.S. Cl. 418—140 2 Claims

1. A volumetric machine, such as a compressor, pump or expansion machine or the like, comprising a screw rotatably mounted about an axis inside a fixed casing and provided with several threads meshing with the teeth of at least one pinion wheel, said casing being provided with at least one low pressure port and at least one high pressure port located close to said pinion-wheel, said screw being provided at its end adjacent the high pressure port, with a sealing device ensuring an almost perfect leak tightness between the screw and the casing wherein the clearance between the screw and the casing increases when moving along a generating line of the casing from the side of the low pressure port towards the side of the high pressure port and reaches its maximum adjacent the sealing device.

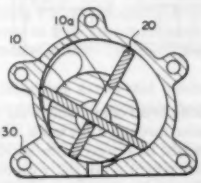


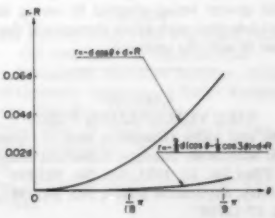
4,484,873

THROUGH VANE TYPE ROTARY COMPRESSOR WITH SPECIFIC CHAMBER CONFIGURATION

Mitsuo Inagaki, and Hideaki Sasaya, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Dec. 8, 1981, Ser. No. 328,796
Claims priority, application Japan, Dec. 9, 1980, 55-174053; May 28, 1981, 56-79998
Int. Cl.³ F04C 18/00, 27/00
U.S. Cl. 418—150 2 Claims





1. A through vane type rotary compressor comprising a housing having a suction port and a discharge port and having a cylindrical inner face; a rotor rotatably mounted within said housing, drive means for rotating said rotor, said rotor being arranged within said housing eccentrically from the center of the housing so that said rotor contacts said cylindrical inner face within the housing at one point; said rotor including at least one vane having a predetermined length, said rotor having means defining at least one slit extending radially outwardly from the center of said rotor, said at least one vane being arranged slidably in said rotor slit means so as to pass through the center of said rotor and extend radially outwardly from opposite sides of said rotor thereby defining two top ends of said at least one vane which are always kept in contact with the inner face of said housing, wherein the volume between the

rotor and the inner face of said housing is changed with rotation of said rotor, said through vane type rotary compressor being characterized in that the configuration of the inner face of the housing is defined by a curve such that the relative acceleration R of said at least one vane to said rotor is expressed by the following formula:

$$R = C1\omega^2(\cos\theta - \cos 3\theta)$$

wherein C1 stands for a constant, ω represents the angular velocity and θ represents the rotation angle.

4,484,874

TIRE VULCANIZING PRESS

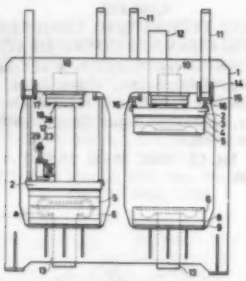
Toshio Okawachi, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1982, Ser. No. 433,523

Claims priority, application Japan, Oct. 23, 1981, 56-168601

Int. Cl.³ B29H *5/02, 5/08*

U.S. Cl. 425—47 **5 Claims**



1. A tire-vulcanizing press comprising a die assembly closed by a pressure cylinder through a lift table, wherein said pressure cylinder is attached to a press frame surrounding said die assembly in a manner which is coaxial with the center line of said die assembly, said vulcanizing press further comprising a spacer attached to said lift table and operative to be interposed between said pressure cylinder and said lift table so as to transmit the pressure force of said pressure cylinder to said die assembly, said spacer being adapted to swing to a position which will not interfere with other elements of the press at the time of release of said die assembly.

4,484,875

TIRE VULCANIZING PRESS

Nobuhiko Irie, and Akira Hasegawa, both of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

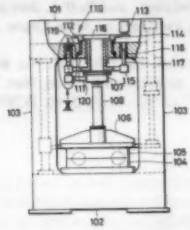
Filed Jul. 12, 1983, Ser. No. 513,064

Claims priority, application Japan, Jul. 14, 1982, 57-122606; Jul. 22, 1982, 57-127847

Int. Cl.³ B29H *5/02, 5/08*

U.S. Cl. 425—47 **11 Claims**

1. A tire vulcanizing press including an upper frame, a lower frame and side frames by way of which said upper frame and said lower frame are integrally connected to one another, wherein a lower die half is fixedly mounted on the lower frame and an upper die half is fixedly secured to a raising and lowering table adapted to be raised up or lowered by means of a raising and lowering means fixedly attached to the upper frame in such a manner that the upper die half is displaced away from or toward the lower die half, characterized in that a working cylinder and a spacer are arranged between the upper frame and the upper die half, turning means connected to said working cylinder to move said working cylinder to a position located outward of the side frames so that the upper die half is displaceable upwardly without any hindrance, said spacer being fixedly mounted on the upper die half and having height adjustment means connected thereto for changing a working



height of said spacer in dependence on a thickness of a die to be mounted on the lower frame.

4,484,876

APPARATUS FOR CONTINUOUS FRICTION-ACTUATED EXTRUSION

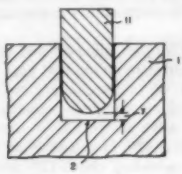
John B. Childs, London, and Norman R. Fairey, Carshalton, both of England, assignors to BICC Public Limited Company, London, England

Division of Ser. No. 232,410, Feb. 6, 1981, Pat. No. 4,397,622. This application May 19, 1983, Ser. No. 495,986

Claims priority, application United Kingdom, Feb. 19, 1980, 8005498

Int. Cl.³ B22F *3/02;* **B21C** *23/01*

U.S. Cl. 425—79 **4 Claims**



1. Continuous friction-actuated extrusion apparatus comprising a passageway extending from an entry end to an exit end between an arcuate first member and a second member in the form of a wheel having circumferential groove formed in its peripheral surface into which groove the first member projects, means for rotating the wheel in such a direction that those surfaces of the passageway constituted by the groove travel from the entry end towards the exit end, means for feeding metal into the passageway at the entry end, and at least one die orifice located in or adjacent to an abutment member extending across the passageway at the exit end thereof for extrusion of material from the passageway characterised by the fact that the abutment member instead of being large enough to block the end of the passageway is of substantially smaller cross-section than the passageway and leaves a substantial gap between the abutment member and the groove surface through which a substantial proportion of the metal will extrude in use to remain as a lining in the groove and to re-enter the passageway at the entry end.

4,484,877

TWIN-NOZZLE EXTRUSION HEAD

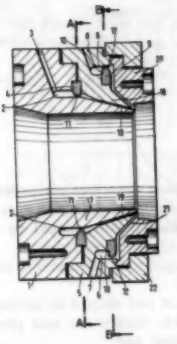
Walter Stucke, Ratingen, and Karl-Heinz Glissmann, Essen, both of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Nov. 26, 1982, Ser. No. 444,388

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1981, 3147709

Int. Cl.³ B29D *23/04*

U.S. Cl. 425—113 8 Claims



1. Twin nozzle extrusion head for depositing two layers in superimposed relationship upon a pipe comprising:

a first annular housing member having a first annular channel and duct means for feeding the channel;

a second annular housing member being disposed generally and in axially displaced relationship to the first member;

a first removable but unadjustable baffle member interposed between the first and second members and having a radially, inwardly directed, non-round, throttling surface, deviating from a circular contour, for providing a narrow annular exit gap from the annular channels;

the non-round baffle surface facing a round exit gap to provide therewith a gap varying in width in azimuthal direction, with a smaller gap width adjacent the duct means;

the first and the second members defining a straight frustoconically shaped extruder nozzle duct extending from said exit gap in slanting relation towards a nozzle exit;

the second member having a second annular channel and duct means, the channel being of larger diameter than the first channel means;

a third annular housing member disposed in axially spaced relation to the second member, the second and third members together defining a second extrusion nozzle terminating close to said first nozzle duct; and

a second removable but unadjustable baffle ring interposed between the second and the third members and having a radially outwardly directed, non-round throttling surface of larger diameter than the throttling surface of the first baffle ring, for providing a narrow gap betwen the second annular duct and the second nozzle gap;

the second nozzle gap having a round surface facing the non-round surface of the second ring to provide therewith a gap varying in width in azimuthal direction, with smaller dimensions adjacent the duct means in the second member.

4,484,878

FILLING LEVEL MONITORING DEVICE

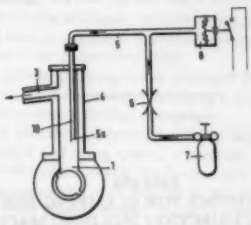
Dietmar Anders, Hanover; Jurgen Voigt, Wathlingen, and Heinrich Kruse, Neustadt, all of Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 15, 1983, Ser. No. 551,921

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1982, 3242239

Int. Cl.³ B29F *3/03*

U.S. Cl. 425—135 6 Claims



1. In an extruding device for processing thermoplastic materials or rubber in which a degassing zone is provided for discharging gas from the material being treated, the improvements comprising:

(a) a degassing dome from which gas is removed from the material, and means communicating with said dome for reducing the pressure in said dome thereby to induce the discharge of said gas,

(b) means defining a level detection orifice in said dome,

(c) conduit means in flow communication with said orifice,

(d) regulator means in flow communication with said conduit means,

(e) means for supplying gas to said conduit means through said regulator means, said regulator means controlling the pressure of the gas, and

(f) pressure detector means in flow communication with said conduit means for detecting the pressure therein,

whereby an increase in pressure in said conduit means due to blockage of said orifice actuates said pressure detector means to signal undesirable material buildup in said dome.

4,484,879

ROLLER PRESS FOR THE PRODUCTION OF GRANULES OR MOLDINGS

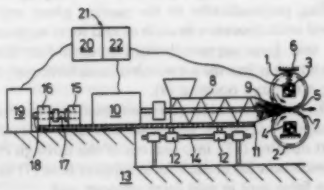
Robert Heinz, Mannheim, and Karl Sommer, Palzing, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 21, 1983, Ser. No. 477,395

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1982, 3207856

Int. Cl.³ B29F *3/012, 3/06;* B29C *3/02*

U.S. Cl. 425—145 4 Claims



1. In a roller press for the production of granules or moldings from a pourable material, which roller press comprises a machine bed supporting a drivable pair of rollers which forms a defined nip and one or more stuffing screws positioned for

feeding the material to be compressed to the nip, said stuffing screws having drive means connected to rotate the screws, the improvement comprising: a movable plate which is movable with respect to the machine bed in the direction of the screw axis, said stuffing screw and drive means being mounted on said movable plate whereby the reaction force of the material fed to said nip will tend to urge said stuffing screw and said movable plate in said direction, a pin adjustably mounted on said plate for movement in the same direction by means of a setting screw, and a stationary load cell fixed to said bed, said load cell being contactable by said pin whereby a force related to said reaction force is exerted by said pin against said load cell.

4,484,880

CLAMPING DEVICE FOR CLAMPING THE FORM TOOLS OF AN INJECTION MOLDING MACHINE TO FORM SUPPORTS

Georg Schwarz, Schwertberg, Austria, assignor to Ludwig Engel KG, Austria

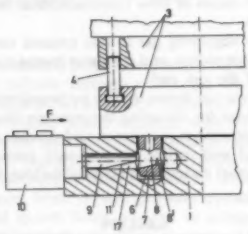
PCT No. PCT/AT82/00026, § 371 Date May 9, 1983, § 102(e) Date May 9, 1983, PCT Pub. No. WO83/01038, PCT Pub. Date Mar. 31, 1983

PCT Filed Sep. 9, 1982, Ser. No. 495,353

Claims priority, application Austria, Sep. 14, 1981, 3955/81; Sep. 14, 1981, 3956/81

Int. Cl.³ B28B *7/00*

U.S. Cl. 425—192 R **7 Claims**



1. A clamping device for clamping at least one form tool in an injection molding machine having a pair of form tools with a parting plane therebetween, comprising:

a form support (1) having a plurality of form support holes (7) therein extending perpendicular to the parting plane, and a form support opening (17) extending at a side of said form support into each form support hole (7);

the one form tool having a plurality of clamping bolts (6) extending perpendicular to the parting plane and being received with clearance in each of said form support holes (7) of said form support holes (7), each bolt having a length which is less than a width of said form support and having a through opening (8);

a slide (9) having a piston rod connected thereto for each form support opening, one slide movable in each form support opening (17), into and out of the through opening (8) of each bolt (6) in each form support hole (7) to retain the one form tool in said form support; and

a separate guide bolt (4) connected to the one form tool for positioning the form tool (3) in a closing plane said guide bolt extending into a positioning hole in the other form tool.

4,484,881

HOT ISOSTATIC PRESSING APPARATUS

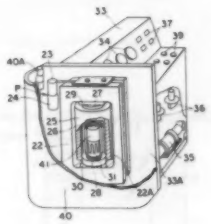
Akira Asari, Osaka; Tamotsu Fukuda, and Shiro Matsuura, both of Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Continuation-in-part of Ser. No. 428,656, Sep. 30, 1982, abandoned. This application Jan. 19, 1984, Ser. No. 572,051

Claims priority, application Japan, Oct. 5, 1981, 56-148465; Oct. 5, 1981, 56-148461

Int. Cl.³ B30B *11/00*

U.S. Cl. 425—405 H **14 Claims**



1. A hot isostatic pressing apparatus comprising:

(a) a container having an opening formed in at least one end thereof, said container being adapted to contain high pressure during use of said apparatus;

(b) a plug sized and shaped to fit releasable in said opening to close said container;

(c) a holder frame sized and shaped to surround said container and to provide support to said plug when said container is pressurized; and

(d) means for pivoting said holder frame back and forth between a work position in which said holder frame surrounds said container and provides support for said plug and a rest position in which said plug may be removed from said opening.

4,484,882

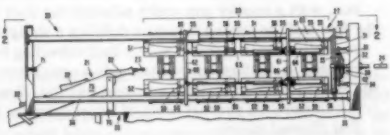
BLOW MOLDING MACHINE

Larry W. English, Terre Haute, Ind., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 367,138, Apr. 9, 1982, abandoned. This application Mar. 8, 1983, Ser. No. 473,291

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—529 **9 Claims**



1. A blow molding machine for forming a chain of hollow, shaped article bodies of a normally highly crystalline thermoplastic material which is biaxially oriented, from a horizontally disposed continuous tube of said material in substantially unoriented condition, but at its orientation temperature, which comprises:

a tube and chain transporter means for pulling the tube from a first point to a second point, and for pushing beyond said second point that portion of the chain formed between the two points;

a tube brake means to brake the travel of the tube past said first point during at least part of the time it is being pulled, whereby the part of the tube between said points becomes longitudinally stretched; and

stationary blow molding means comprising a plurality of

stationary blow molds between said first point and said second point, each having corresponding mold pieces closable on the stretched part of the tube, and openable after formation of the hollow body in the cavity defined by the closed mold pieces, and means for inflating the portion of the stretched part of the tube within the mold cavity, whereby one of said bodies is formed therein, and the material thereof becomes biaxially oriented, and

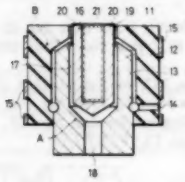
chain carrier means for supporting against flexure that portion of the chain formed between the two points until it has been pushed beyond said second point.

4,484,883

MULTI-LAYER EXTRUSION DIE

Yukio Honda; Hitoshi Komatsu, and Yoshiyuki Mihara, all of Chiba, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1983, Ser. No. 482,130
Claims priority, application Japan, Jun. 7, 1982, 57-97338
Int. Cl.³ B29F *3/08*
U.S. Cl. 425—462 **11 Claims**



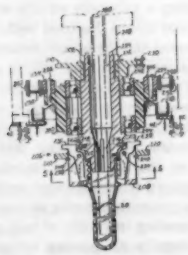
1. A multi-layer extrusion die, for extruding thermoplastic resins to form a multi-layer tubular resin, wherein said die comprises: an inner and an outer layer resin flow path both of which are joined to each other in the vicinity of an extrusion slit; a first temperature control means disposed inside said inner layer resin flow path, a second temperature control means disposed outside said outer layer resin flow path; and a metallized film provided on a peripheral surface of said inner layer resin flow path.

4,484,884

APPARATUS FOR HIGH RATE PRODUCTION OF BIAXIALLY ORIENTED THERMOPLASTIC ARTICLES

James G. Wiatt; James W. Calvert; Samuel L. Belcher, all of Cincinnati, and Roger D. Smith, Bethel, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Division of Ser. No. 257,468, Apr. 24, 1981, Pat. No. 4,382,760.
This application Jan. 25, 1983, Ser. No. 460,828
Int. Cl.³ B29C *17/07*
U.S. Cl. 425—534 **1 Claim**



1. An apparatus for high rate production of hollow blow molded biaxially oriented articles from thermoplastic article preforms having a formable portion and a neck portion, the apparatus having a machine frame defining a path along which are means for blow molding by biaxially expanding the formable portion when its temperature is at or near the molecular orientation temperature of the thermoplastic by injection therein of a pressurized fluid, the apparatus comprising:

(a) said machine frame; and

(b) article carrier means suspended by the machine frame for conveying said preforms along said path while supporting each preform with its neck portion uppermost and the formable portion at said temperature for said injection and further comprising

(1) a body,

(2) a cylindrical chuck rotatably supported by the body and having a passage therethrough to admit at one end thereof the pressurized fluid,

(3) an article gripping means disposed at the other end of the chuck for releasably retaining a preform by the neck portion which further comprises:

(a) a plurality of levers rotatably supported upon the chuck and being spaced around the longitudinal centerline of the chuck, the levers each having an end for engaging the neck portion of the article;

(b) lever biasing means connected between the levers and the chuck for holding the levers in an article retention position; and

(c) a release ring for engaging the other ends of the levers, the release ring being slidably supported by the chuck to permit movement parallel to the longitudinal centerline of the chuck sufficient to rotate the levers to an article releasing position, and

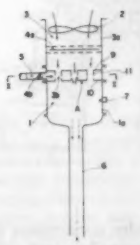
(4) resilient sealing means attached to the chuck at the gripping end thereof for forming a compression seal between the surface of the free end of the neck portion and the chuck, the compression seal being sufficient to contain the forces of the aforesaid injection.

4,484,885

PULSE COMBUSTION BURNER

Norihisa Machii, Kobe; Atsushi Manago, Yao, and Sadao Narukawa, Amagasaki, all of Japan, assignors to Osaka Gas Company Ltd., Osaka, Japan

Filed Jun. 8, 1983, Ser. No. 502,358
Int. Cl.³ F23C *11/04*
U.S. Cl. 431—1 **3 Claims**



1. A pulse combustion apparatus comprising:

a cylindrical combustion chamber having a fuel-air inlet end and an exhaust end,

a tail pipe having a much smaller diameter than said combustion chamber is connected to said exhaust end of said combustion chamber,

a fuel gas duct connected to said inlet end of said combustion chamber,

a combustion air feed duct connected to said fuel gas duct to feed air thereto,

a reverse flow check valve means in said combustion air feed duct upstream of said fuel gas duct,

a fuel gas delivery pipe connected to said fuel gas duct for feeding fuel thereto,

a reverse flow check valve means in said fuel gas delivery pipe,

said fuel gas duct comprising oppositely disposed, spaced, perforated disc secured in said fuel-air inlet end perpendicular to its axis and in parallelism with one disc upstream of said fuel gas delivery pipe and one disc downstream of said fuel gas delivery pipe,

a plurality of small diameter pipes secured at their upstream and downstream ends in an airtight manner in said perforations in said spaced disc and arranged in said gas fuel duct in parallelism with each other and perpendicular to said disc with their upstream end open to said air feed duct and their downstream end open to said combustion chamber,

the inside of said small diameter pipes defines said fuel gas duct,

said fuel gas duct and said spaced discs forming a fuel feed space surrounding said small diameter pipes which are secured to said discs, said fuel feed space communicating with said fuel gas delivery pipe,

each of said small diameter pipes including a plurality of transverse gas jet openings that communicate with said fuel feed space to permit fuel flow from said fuel feed space to mix with air flow through said small diameter pipes from said air feed duct to said combustion chamber.

4,484,886

COMBUSTION CYLINDER CONSTRUCTION FOR OIL SPACE HEATER OF THE TYPE FOR RADIATING HEAT RAYS

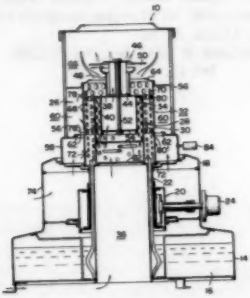
Kazuharu Nakamura, and Yutaka Nakanishi, both of Nagoya, Japan, assignors to Toyotomi Kogyo Co., Ltd., Aichi, Japan

Filed Jul. 19, 1982, Ser. No. 399,569

Claims priority, application Japan, Jul. 18, 1981, 56-112787; Jul. 18, 1981, 56-112788; Dec. 23, 1981, 56-214071

Int. Cl.³ F23D *5/00*

U.S. Cl. 431—201 **19 Claims**



1. A combustion cylinder construction for an oil space heater of the type for radiating heat rays, comprising:

a double combustion cylinder comprising an inner cylindrical member and an outer cylindrical member each formed with through-holes and adapted to mix a fuel oil vaporized from a wick with an air introduced from a part of said through-holes to form a combustible gas and burn a part of said combustible gas in a space defined between said inner cylindrical member and said outer cylindrical member;

a combustion chamber formed above said double combustion cylinder;

a flame spreading means arranged in said combustion chamber so as to be positioned above said inner cylindrical member;

a heat-permeable cylinder arranged to surround said double combustion cylinder and said combustion chamber;

a partition means extending between the top portion of said outer cylindrical member and said heat permeable cylinder, the bottom wall of said combustion chamber being defined by said partition means;

a passage for supplying a combustion air to a space defined between said heat-permeable cylinder and said outer cylindrical member; and

said through-holes of said outer cylindrical member being divided into upper through-holes, middle through-holes and lower through-holes, said upper and middle through-holes being formed to have a size larger than said lower through-holes so that substantially all air to be introduced directly to the exterior of said flame spreading means is supplied directly through said space between said heat permeable cylinder and said outer cylindrical member.

4,484,887

DEVICE IN BURNERS

Sune Ö Pettersson, Kalix, Sweden, assignor to AB Allterm, Kalix, Sweden

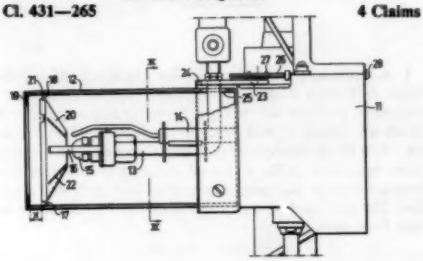
PCT No. PCT/SE80/00296, § 371 Date Jul. 23, 1981, § 102(e) Date Jul. 23, 1981, PCT Pub. No. WO81/01604, PCT Pub. Date Jun. 11, 1981

Continuation of Ser. No. 287,756, Jul. 23, 1981, abandoned. This PCT application Nov. 21, 1980, Ser. No. 568,935

Claims priority, application Sweden, Nov. 29, 1979, 790986

Int. Cl.³ F23Q *3/00*

U.S. Cl. 431—265 **4 Claims**



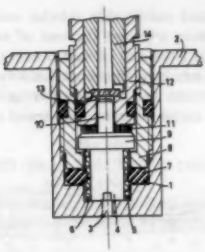
1. In a burner apparatus for oil burners which includes a feed tube having an inner surface and an end, a burner retainer including a fuel feed pipe and a nozzle connected thereto disposed within the feed tube, the improvement comprising, annular flange means mounted to the end of the feed tube, said flange means being rectangular in cross section and extending perpendicularly inwardly of the feed tube from the inner surface thereof and defining a generally axially oriented opening into the feed tube, shield means disposed within the feed tube between said flange means and the nozzle, means for adjustably mounting said shield means in the feed tube so as to permit the axial spacing between said shield means and flange means to be varied, said shield means having a generally central opening through which a flame from the nozzle can extend and an outer peripheral portion, means for orienting said shield means within the feed tube so that said outer peripheral portion of said shield means is spaced from the inner surface of the feed tube so as to provide a generally circular air gap therebetween, said flange means extending inwardly of said peripheral portion of said shield whereby air passing between said shield means and the inner surface of the feed tube is directed by said flange means perpendicularly toward the axis of the feed tube adjacent said axial opening so as to act to constrict any flame extending through said opening.

4,484,888

ADJUSTABLE EXPANDER-EVAPORATOR AND VARIABLE MAXIMUM FLOW LIMITER FOR A LIQUIFIED GAS LIGHTER

Claude R. Grossiord, Annecy, and Jean P. Molliex, Seynod, both of France, assignors to S. T. Dupont, Paris, France

Filed Sep. 29, 1982, Ser. No. 427,349
Claims priority, application France, Oct. 16, 1981, 81 19544
Int. Cl.³ F23D *13/04*
U.S. Cl. 431—344 **4 Claims**



1. A valve for a liquefied gas lighter, comprising:

expander-evaporator means for expanding and evaporating said liquefied gas; and

a flow limiter for limiting flow of said liquefied gas to said expander-evaporator means, said flow limiter comprising:

a rigid member;

a deformable sleeve surrounding said rigid member, said sleeve being constructed of a gas permeable material;

an elastically deformable element in contact with said sleeve and diametrically opposed to said rigid member; and

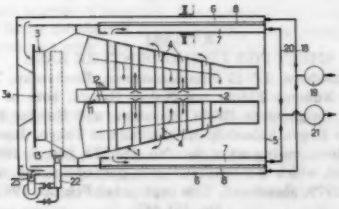
compression means for directly compressing said elastically deformable element and deforming said element radially in the direction of said sleeve and said rigid member to thereby compress said sleeve against said rigid member.

4,484,889

INSTALLATIONS FOR PROCESSING A PRODUCT IN A GAS MEDIUM

Paul H. Marchal, Leimbach, and Guy F. Doucin, Chelles, both of France, assignors to Air Industrie, Courbevoie, France

Filed Mar. 1, 1983, Ser. No. 470,983
Claims priority, application France, Mar. 3, 1982, 82 03544
Int. Cl.³ F24H *1/00*; F24C *3/10*; F27B *9/28*
U.S. Cl. 432—219 **10 Claims**



1. An installation for processing a product in a gas medium, particularly a drying or heat treatment installation, said installation comprising:

means defining at least one blowing chamber in which the product moves horizontally,

treatment gas supplying means for supplying the blowing chamber with treatment gas,

means defining a recovery chamber having two horizontal walls and disposed so as to surround the blowing chamber and the supplying means,

means defining a plurality of discharge passages each having an inlet to said blowing chamber and an outlet to said recovery chamber so that a partial recycling of the treatment gas is provided from said discharge passages to said supplying means,

intake means for admitting treatment gas into said recovery chamber, and

discharge means for discharging a part of the treatment gas from said recovery chamber,

at least one of the two horizontal walls of the recovery chamber comprising:

means defining a plurality of flattened outer ducts forming said intake means and being oriented perpendicularly to the direction of movement the product, each of said outer ducts having an outlet in communication with the supply means, and

means defining a plurality of flattened inner ducts forming said discharge means and being oriented perpendicularly to the direction of movement of the product, each of said inner ducts having an inlet situated between the outlets of the outer ducts and the outlets of discharge passages,

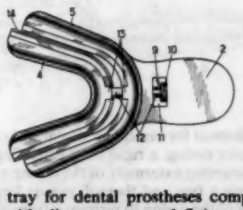
said means defining said inner and outer ducts including a common dividing wall, provided between each outer duct and inner duct, for promoting heat exchange between the intake treatment gas and the discharge treatment gas, the intake treatment gas and the discharge treatment gas flowing in countercurrent relation in the outer and inner ducts, and the outer ducts being supplied in parallel with the intake gas, and the inner ducts being supplied in parallel with the discharge gas.

4,484,890

IMPRESSION TRAY FOR DENTAL PROSTHESES

Jean-Luc Jouvin, 42 Ave. du General Leclerc, 72000 Le Mans, France

Filed Mar. 22, 1983, Ser. No. 477,614
Claims priority, application France, Apr. 6, 1982, 82 05917
Int. Cl.³ A61C *9/00*
U.S. Cl. 433—47 **9 Claims**

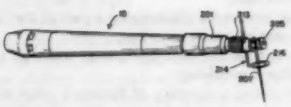


1. An impression tray for dental prostheses comprising a U-shaped structure with divergent arms defining a channel having a U-shaped cross-section with two sidewalls and a bottom, said structure comprising two complementary opposed sections forming sidewall and bottom portions, an outer section and an inner section, said sections being separably connectible along a common mutual contact surface generally normal to and generally following the bottom of said U-shaped channel, said bottom portions containing oppositely undercut grooves along said common mutual contact surface to form a dovetail-like single groove communicating with said channel when said sections are connected together, each section defining at least one undercut groove in its sidewall portion thereof generally parallel to the bottom of said channel for retaining impression paste placed in said channel, said structure further comprising assembly means for connecting the said two sections separably together, so that the two sections may be separated to enable an impression formed by impression past to be removed from, and reinsertable into said tray without being damaged or deformed.

4,484,891
VIBRATORY ENDODONTIC DEVICE

John E. Nash, Downingtown, Pa., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Oct. 6, 1982, Ser. No. 433,075
Int. Cl.³ A61C 1/16
U.S. Cl. 433—116 14 Claims

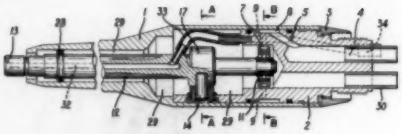


1. A vibratory device comprising:
a housing;
vibratory drive means within said housing;
means supporting said vibratory drive means within said housing, said support means substantially preventing the transfer of vibration between said vibratory drive means and said housing;
a work tool operatively connected to said vibratory drive means;
an adjustable stop means operatively connected to said housing for limiting travel of said work tool between selected positions during use of said vibratory device; and
means for substantially isolating said stop means from vibration created by said vibratory drive means.

4,484,892
HAND-HELD PNEUMATIC IMPLEMENT FOR REMOVING DENTAL SCALE

Jacques Pernot, Vieilley, and Bernard Lacour, Besancon, both of France, assignors to Micro-Mega S.A., Besancon, France

Filed May 5, 1982, Ser. No. 374,952
Claims priority, application France, May 6, 1981, 81 09139; Apr. 28, 1982, 82 07478
Int. Cl.³ A61C 3/03
U.S. Cl. 433—118 5 Claims



1. Implement for removing dental scale comprising, a hand-held tubular casing, a rigid shaft extending axially in said casing for mounting externally of the casing a dental scale-removing tool on a free end thereof, means for mounting the shaft internally of the casing to restrain it from rotation and allowing it to vibrate rotationally, a fluid-driven dynamically unbalanced motor coupled to the shaft for rotation about an axis parallel to the longitudinal axis of the shaft to impart to the shaft subsonic rotational vibrations, a bearing coupling the motor to said shaft for rotation about said axis, and the shaft being sufficiently rigid to vibrate free of torsion.

4,484,893
AIR TURBINE HANDPIECE FOR DENTAL SCALING AND OTHER APPLICATIONS

Arnold H. Finn, Farmington, Conn., assignor to Taco Products, Inc., Plainville, Conn.

Filed Feb. 22, 1983, Ser. No. 468,489
Int. Cl.³ A61C 1/07
U.S. Cl. 433—118 18 Claims

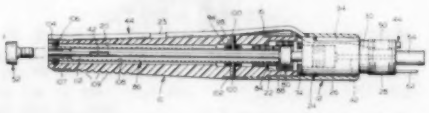
1. In a vibratory dental and medical handpiece for effecting oscillatory motion of a tool bit, the combination comprising:

A. an elongated housing having a longitudinal passage opening at the front end thereof and a turbine chamber spaced from said front end, a fluid inlet at the rear end for connection to a source of fluid under pressure, a fluid passage from said inlet to the periphery of said turbine chamber, and an exhaust passage from said turbine chamber to the exterior of said housing;

B. a turbine rotor in said turbine chamber and having a drive shaft extending therefrom in said passage towards said front end of said housing;

C. bearing means in said housing supporting said drive shaft and therby said turbine rotor for rotation within said housing;

D. an elongated oscillatable tubular rod in said passage extending from adjacent the end of said drive shaft to adjacent said front end of said housing, said rod being a lightweight tubular element of relatively thin-walled tubular cross section and fabricated from a fatigue-resistant lightweight metal whereby high speed oscillatory motion



of said rod produces concurrent harmonic vibration thereof;

E. a cup member on the rear of said rod adjacent said drive shaft and having a recess therein receiving the end of said drive shaft, said cup recess and said drive shaft end cooperating to provide eccentric drive means to effect eccentric bearing action of said shaft end in said cup and thereby oscillatory motion of said rod;

F. means in said passage of said housing permitting limited oscillatory movement of said rod therewithin while preventing relative rotation thereof, said rod being supported on said end of said drive shaft by said cup member so that it may oscillate along substantially its entire length, said rotation preventing means permitting radial movement of said rod in said passage so as to permit said harmonic vibration thereof over the major portion of its length without substantial damping thereof;

G. means at the other end of said rod for releasable engagement therewith of an associated tool bit.

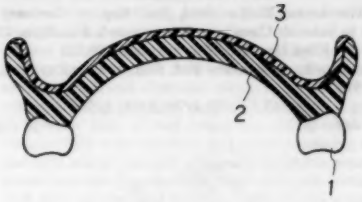
4,484,894
SHEET FOR LINING DENTURE BASE

Eiichi Masuhara, 2-5-10 Hon-Komagome, Bunkyo-ku, Tokyo, Japan; Kunizoh Kidoh, and Nobuo Bannai, both of Iwaki, Japan, assignors to Eiichi Masuhara and Kureha Kagaku Kagaku Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Continuation-in-part of Ser. No. 183,733, Sep. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 61,244, Jul. 27, 1979, abandoned. This application Feb. 23, 1982, Ser. No. 351,467
Int. Cl.³ A61C 13/02
U.S. Cl. 433—168 2 Claims

1. A cushioning sheet adapted for lining the gingival mucosa-facing surface of a polymethyl methacrylate denture base, said sheet consisting essentially of a copolymer consisting essentially of 40 to 60 parts by weight of vinylidene fluoride units, 20 to 30 parts by weight of tetrafluoroethylene units and 20 to 30 parts by weight of hexafluoropropylene units and/or

chlorotrifluoroethylene units, said sheet being 0.2 to 3.0 mm in thickness and having a modulus of rigidity of 10 to 150 kg/cm^2,



a water absorbance of less than 0.05% and an adhesion strength of more than 250 kg/cm^2.

4,484,895

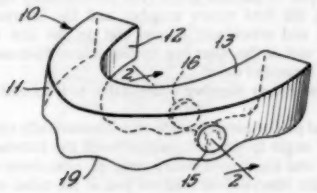
INTEGRATED ORAL MAGNETIC OSTEOGENIC APPLIANCES

Harry Smiley, White Plains, and Abraham Blechman, Tappan, both of N.Y., assignors to Medical Magnetics, Inc., Ramsey, N.J.

Continuation-in-part of Ser. No. 322,423, Nov. 18, 1981, Pat. No. 4,424,030, which is a continuation of Ser. No. 019,427, Mar. 12, 1979, abandoned. This application Oct. 3, 1983, Ser. No. 538,491

Int. Cl.^{3} A61C *5/04*

U.S. Cl. 433—215 **23 Claims**



1. As an article of manufacture, a unitary intra-oral positioning fixture for use in orthodontic and/or periodontal therapy and bone augmentation, said fixture comprising upstanding buccal and lingual flange members of magnetically transparent material adapted respectively for confronting conformance with the buccal and lingual sides of teeth and in overlap with an associated alveolar-bone region requiring osteogenesis and soft-tissue repair, means compliantly interconnecting said flange members in a manner to permit their selectively removable fixation to span said region, and means including separate polarized sources of magnetic flux carried by said buccal and lingual flange members in mutually facing relation and magnetically coacting with each other via said region.

4,484,896

SIMULATOR FOR PRACTICING TRACHEAL INTUBATION

Ole B. Køhnke, Lyngby, Denmark, assignor to Testa-Laboratorium A/S, Glostrup, Denmark

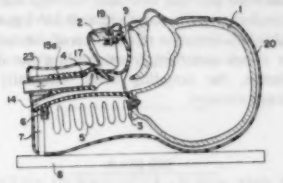
Filed May 2, 1983, Ser. No. 490,542

Claims priority, application Denmark, May 4, 1982, 2001/82

Int. Cl.^{3} G09B *23/32*

U.S. Cl. 434—265 **3 Claims**

1. A simulator for practising tracheal intubation comprising a manikin head attached to a support with the face turning away from said support and having a skull comprising a movable lower jaw, and a neck connected to the skull and the support in such a manner that the manikin head can be tilted forwards and backwards, characterized in that the oral cavity and throat of the manikin head are composed of a thin-walled funnel-shaped element comprising a highly elastic material, said funnel-shaped element having at its upper front edge a convex tongue element having a front portion which is permanently attached to the inside of the movable lower jaw, and at its rear edge means for attaching the funnel-shaped element to the underside of the skull, the lower portion of said funnel-



shaped element comprising a front duct of essentially circular cross-section and being connected with one end of a non-collapsible tube, which at its opposite end is hinged to the support and a rear duct of essentially oval cross-sectional shape, a flap extending from the inner surface of the funnel-shaped element and having the shape similar to that of epiglottis being provided in the zone adjacent to the entrance of the front duct.

4,484,897

DEVICE FOR NIPPLING UP ELECTRODES IN AN ELECTRIC FURANCE

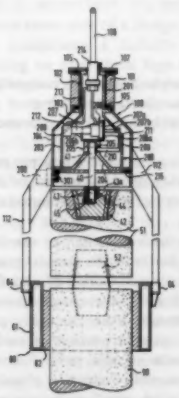
Kurt Schudlich, Witten-Annen; Günter Vielstich, Witten-Heven; Josef Mühlenbeck; Josef Otto, both of Wetter; Hannsgeorg Bauer, Witten-Bommern; Dieter H. Zöllner, and Friedrich Rittmann, both of Nuremberg, all of Fed. Rep. of Germany, assignors to Arc Technologies Systems, Ltd., Grand Cayman, Cayman Islands

Filed Apr. 13, 1982, Ser. No. 367,899

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1981, 3115628

Int. Cl.^{3} H01J *9/18*

U.S. Cl. 445—67 **13 Claims**



1. A device for nippling up electrode sections on an electrode located vertically within an electrode holder within an arc electric furnace, screw nipples connecting the electrode sections, comprising: an outer, essentially hollow cylindrical element, and an inner, coaxial, equally essentially hollow cylindrical element within the outer element, a drive means for rotating the inner element relative to said outer element, a coupling including a controllable lock for detachably engaging a connector element affixed to an electrode section, and an

insertion means to guide the connector element to the lock; the inner element being configured for connection with the electrode section to be nippled in a torsional force transmitting relationship with the inner element, the outer element being configured for coaxially aligned coupling with the electrode to which the electrode section is to be connected, the outer element engaging at least one of the electrode holder and the arc electric furnace to provide torsional stability for the device relative to the furnace, the outer element having a suspension means movable in a direction of insertion of the connector into the lock for shock absorbingly suspending the device on a lifting appliance, the coupling being integrally contained within the inner element.

4,484,898

TORSIONAL VIBRATION DAMPER

Satoshi Kohno, Minami-ashigara, Japan, assignor to Atsugi Motor Parts Company Limited, Japan

Filed Nov. 19, 1982, Ser. No. 442,970
Claims priority, application Japan, Dec. 16, 1981, 56-203153
Int. Cl.³ F16D 3/14
U.S. Cl. 464—64 **5 Claims**

1. A torsional vibration damper to transmit torque between driving and driven members, comprising:

a drive plate assembly operatively connected to an input member;

a hub operatively connected to an output member, said hub including a plurality of hub arms extending outward from the outer periphery of the hub at equal circumferentially spaced intervals;

a pair of equalizers each including an annular portion and a plurality of arm portions, the annular portion being journalled on the outer peripheries of and floating independently of the hub arms, the arm portions each being tapered radially inward from the inner periphery of the annular portion, an arm portion of each said equalizer being disposed between adjacent hub arms;

said drive plate assembly having a plurality of windows formed therein, each window having substantially the same arclength as an arcuate spacing between adjacent hub arms; and

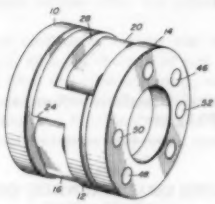
compression spring sets interposed between the arm portions of said two equalizers and between the arm portions and the hub arms to establish groups of said compression spring sets acting in parallel, said compression spring sets of each group also acting in series between adjacent hub arms, said drive plate assembly engaging the groups of said compression spring sets by means of inner edges of said windows.

4,484,899

COUPLING FOR ACCOMMODATING MISALIGNMENT BETWEEN SHAFTS

Walter Haarmann, Wolfenbüttel, Fed. Rep. of Germany, assignor to Schmidt Couplings, Incorporated, Hamilton, Ohio

Filed Dec. 16, 1982, Ser. No. 450,321
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151401
Int. Cl.³ F16D 3/70, 3/04, 3/60
U.S. Cl. 464—69 **23 Claims**



1. A coupling for connecting and accommodating misalignment between rotary shafts, comprising:

(a) a first rotary member connectable to a first shaft;

(b) a floating disk-shaped intermediate element having a pair of first portions, and a pair of second portions circumferentially intermediate said first portions and being of greater axial depth than the first portions;

(c) a first pair of parallel guide rods diametrically opposed between the first rotary member and the intermediate member and articulated at one end on the first rotary member and, at the other end, on the intermediate member to form a parallel drive;

(d) a second rotary member connectable to a second shaft; and

(e) a second pair of parallel guide rods diametrically opposed at a 90° angle to the first pair between the intermediate member and the second rotary member, articulated at one end on the intermediate member and at the other end on the second rotary member to form a parallel drive;

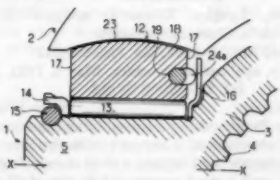
(f) wherein said first and second portions define first and second pairs of recesses on faces opposing said first and second rotary members; said first pair of guide rods at least partially axially disposed within said first pairs of recesses and said second pair of guide rods substantially disposed within said second pair of recesses.

4,484,900

ARTICULATED TRANSMISSION JOINT INCLUDING ROLLERS

Michel A. Orain, Conflans Ste Honorine, France, assignor to Glaenzer Spicer, Poissy, France

Continuation of Ser. No. 276,634, Jun. 23, 1981, abandoned. This application Aug. 19, 1983, Ser. No. 524,692
Claims priority, application France, Jul. 7, 1980, 80 15061
Int. Cl.³ F16D 3/22
U.S. Cl. 464—111 **10 Claims**



1. An articulated transmission joint comprising:

a male element including a hub having plural arms extending therefrom, each arm having rotatably and slidably mounted thereon a roller;

a female element defining plural runways each receiving a respective said roller; and

each said arm including a clearance-taking up device for outwardly biasing the respective said roller away from said hub, each said clearance-taking up device comprising means defining a surface rigid with said hub, a groove in an annular face of said respective roller adjacent said surface rigid with said hub, said groove defining an inner end face, and at least one elastically yieldable means interposed between and in engagement with said surface rigid with said hub and said inner end face of said groove, said elastically yieldable means being fully withdrawable into said groove when it is compressed so that said annular face of said respective roller can engage said respective surface rigid with said hub.

4,484,901

AUTOMATIC SPEED VARIATOR FOR MOTOR VEHICLES

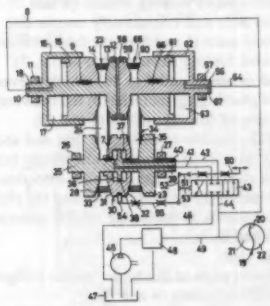
Gabriele Toti; Carlo Guatta, both of Milan; Luciano Chidini, Arese, and Luciano Longhi, Busto Arsizio, all of Italy, assignors to Alfa Romeo S.p.A., Milan, Italy

Filed Jan. 21, 1982, Ser. No. 341,289

Claims priority, application Italy, Feb. 6, 1981, 19579 A/81

Int. Cl.³ F16H *55/52, 7/08;* G01F *3/24*

U.S. Cl. 474—28 **5 Claims**



1. In a vehicle of the type including an engine and a drive shaft, an automatic speed variator comprising an input shaft, an output shaft and a transfer shaft, an input sheave carried by said input shaft and including a pair of opposed frustoconical first half-sheaves, one of said first half-sheaves being integrally connected to said input shaft and the other of said first half-sheaves being rotatable about and axially slidable on said input shaft, an input transfer sheave carried by said transfer shaft and including a pair of opposed frustoconical second half-sheaves, one of said second half-sheaves being integrally connected to said transfer shaft and the other of said second half-sheaves being rotatable about and axially slidable on said transfer shaft, an output transfer sheave carried by said transfer shaft and comprising a pair of opposed frustoconical third half-sheaves, one of said third half-sheaves being integrally connected to said transfer shaft and the other of said third half-sheaves being rotatable about and axially slidable on said transfer shaft, an output sheave carried by said output shaft and including a pair of opposed frustoconical fourth half-sheaves, one of said fourth half-sheaves being integrally connected to said output shaft and the other of said fourth half-sheaves being rotatable about and axially slidable on said output shaft, a first drive belt connecting said input transfer sheave to said input sheave and a second drive belt connecting said output sheave to said output transfer sheave, said axially slidable second and third half-sheaves being interconnected for movement as a unit, said engine being connectable to said input shaft and said drive shaft being connectable to said output shaft, detector means for detecting preselected operative parameters of the engine and the vehicle, control means connected to and energized by said detector means, an actuator operatively coupled to said control means for operation thereby, said actuator being coupled to at least one of said slidable first and fourth half-sheaves for axially positioning the same, and means interconnecting said slidable first and fourth half-sheaves for movement together in the same axial direction and in an opposite sense relative to the cooperating one first and fourth half-sheaves.

4,484,902

DRIVE PULLEY IN PARTICULAR FOR THE DISTANCE RECORDER OF A BICYCLE

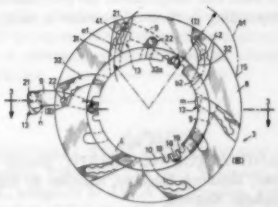
Roger Huret, deceased, late of Nanterre, France, and Alain P. B. Huret, legal representative, Bougival, France, assignors to Huret et ses Fils, Nanterre, France

Filed Mar. 9, 1982, Ser. No. 356,489

Claims priority, application France, Mar. 23, 1981, 8105716

Int. Cl.³ F16H *55/48*

U.S. Cl. 474—195 **12 Claims**



1. A drive pulley structure, in particular for a distance recorder of a cycle or motorcycle; said pulley structure being fixed coaxially to an outer side of a flange of a wheel hub, said pulley structure comprising a radially outwardly opened grooved ring having an axis, three lugs extending axially of said ring and each lug having a free end portion defining a nose portion engaging both an inner a second side of said flange remote from said outer side relative to said ring and a peripheral portion of said hub flange which peripheral portion has a diameter which may vary from one cycle or motorcycle to another, means for mounting said lugs on said ring comprising a flat annular portion radially outwardly extending from said ring and constituting a unit with said ring, three arms, each arm having inner and outer end portions positioned relative to said ring axis, pivot means on said ring pivotally mounting the inner portion of each arm in a respective one of three circumferentially evenly spaced-apart positions, each position being located on a fixed circle on said unit whereby each arm is angularly adjustable relative to said ring by pivoting about a pivot axis parallel to the axis of said ring, each arm having its outer end portion carrying one of said lugs, and a retaining means for each arm, said retaining means being defined by a first positioning means located on said flat annular portion cooperating with a second positioning means located on said arms and retaining said arms in identical angular positions selected from a plurality of different predetermined angular positions corresponding to different diameters of an imaginary circle which is concentric with the ring and on which imaginary circle the nose portion of each lug is located whereby to engage said nose portions on both said inner side of said flange and on said peripheral portion of said flange thereby maintaining said ring coaxial with said flange.

4,484,903

DRIVE BELT OF TRAPEZOIDAL CROSS-SECTION

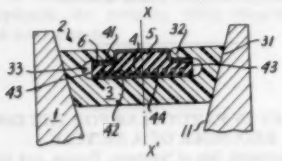
André Schneider, St. Hyppolyte, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed May 19, 1983, Ser. No. 496,184

Claims priority, application France, Jun. 1, 1982, 82 09629; Nov. 18, 1982, 82 19479

Int. Cl.³ F16G 5/16

U.S. Cl. 474—242 13 Claims



1. A drive belt whose cross-section has a substantially trapezoidal outer contour and which is formed essentially of at least one core closed on itself and of an assembly of riders mounted alongside each other on the core in such a manner that the inner face of the core is in contact with the riders, characterized by the fact that on at least one of its inner or outer faces the core has at least one longitudinal rib permanently housed within a corresponding portion of a cutout in each rider.

4,484,904

MANUFACTURING PLASTIC BAGS

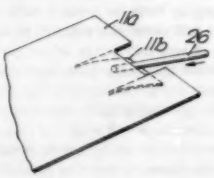
Arthur J. Fowler, Reading, England, assignor to Radyne Limited, Warkingham, England

Filed Dec. 30, 1982, Ser. No. 454,682

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1982, 8200066

Int. Cl.³ B65D 33/16

U.S. Cl. 493—213 9 Claims



1. A method of making a plastics bag having a filling pipe, comprising the steps of:

cutting one wall of a flattened tube of plastics material to form a flap;

cutting the opposite wall of the flattened tube to form an opening, registering with at least a part of the flap;

inserting a pusher member through the opening to cause the flap to extend out of the plane of the first wall of the tubing;

inserting the filling pipe alongside the portion of the pusher member projecting through the first wall and on the inner side of the flap to enter the space between the overlying walls of the tube;

and thereafter sealing the flattened tube around the filling pipe.

4,484,905

ZIG-ZAG FOLDING MACHINES

Adi K. Ashburner, Hargrave, England, assignor to Harper & Tunstall Limited, Northamptonshire, England

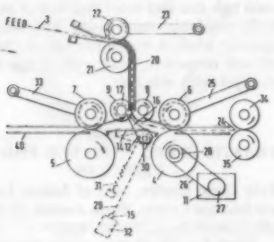
PCT No. PCT/GB81/00010, § 371 Date Nov. 25, 1981, § 102(e) Date Nov. 25, 1981, PCT Pub. No. WO81/02881, PCT Pub. Date Oct. 15, 1981

PCT Filed Feb. 3, 1981, Ser. No. 328,588

Claims priority, application United Kingdom, Mar. 31, 1980, 8010812

Int. Cl.³ B65H 45/14

U.S. Cl. 493—415 8 Claims



1. A Zig-Zag folding machine (1 or 2), for the concertina-like folding of pliable strip material (3), comprising:

folder means having first and second parts (4 and 5);

first and second spaced folding rollers (6 and 7) rotatable about parallel axes and respectively cooperable with the first and second parts (4 and 5) of the folder means to form first and second folding devices (4, 6 and 5, 7);

non-return feed means (8 and 9 or 10) which prevent return movement of pliable strip material (3) fed between the first and second spaced folding rollers (6 and 7);

drive means (11) operable to drive the first and second rollers (6 and 7), directly or indirectly, alternately both in one direction and then both in the opposite direction; and

movable guide means (12 or 13) for directing the pliable strip material (3) towards at least one of the spaced folding devices (4, 6 and 5, 7);

characterized in that:

the first and second parts of the folder means comprise third and fourth folding rollers (4 and 5);

the folder means include an intermediate part (14) extending between the third and fourth folding rollers (4 and 5); and

the movable guide means (12 or 13) are mounted between the third and fourth folding rollers (4 and 5) for movement relative to the intermediate part (14) of the folder means by turning about an axis extending parallel to the axes of the first and second folding rollers (6 and 7) and disposed on the side of the intermediate part (14) opposite to the non-return feed means (8 and 9 or 10).

4,484,906

SHELL TYPE CENTRIFUGE ROTOR RETAINING RUPTURED TUBE SAMPLE

David H. Strain, Los Gatos, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed May 2, 1983, Ser. No. 490,989

Int. Cl.³ B04B 5/02

U.S. Cl. 494—16 7 Claims

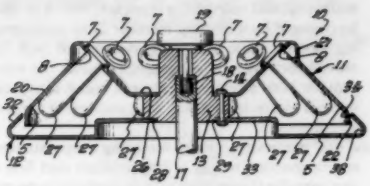
1. A shell type centrifuge rotor adapted for containing a plurality of sample tubes and for retaining the contents of said sample tubes if any said tube ruptures while in said rotor, comprising:

an upper shell and a lower shell connected by a central hub interposed therebetween, said hub being adapted for coupling to a driving means;

said upper shell having a substantially frustoconical shape,

including a conical portion having a rim-like extension at the bottom end thereof;

said upper shell having a recessed top surface, said top surface having a form generally corresponding to the interior of an inverted frustum;



a plurality of sample tubes disposed in a circular locus in said recessed top surface; said lower shell having a bottom with upturned inward sloping conical sides, said sides disposed so that the uppermost part thereof is proximate said upper shell.

4,484,907

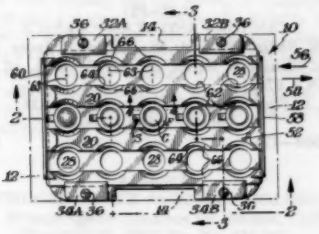
MICROTUBE ADAPTER HAVING A HOLDING AND UNCAPPING APPARATUS

Edward T. Sheeran, Jr., Southbury, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 20, 1983, Ser. No. 543,755

Int. Cl.³ B04B *15/00*

U.S. Cl. 994—85 **7 Claims**



1. An adapter for carrying a rimmed tube comprising:

a support plate having an opening therein, the opening being sized to receive and support a tube on the undersurface of the rim thereof; and

a slide plate having a retaining lip thereon, the slide plate being mounted above the support plate and moveable with respect thereto from a home position in which a tube is insertable into the support plate without obstruction by the slide plate to a first, holding, position in which the retaining lip overlies a portion of the rim of a tube insertable into the support plate thereby to maintain the tube in the opening in the support plate.

4,484,908

METHOD FOR RELIEVING EXCESS NEGATIVITY IN A DRAINAGE DEVICE

Leonard D. Kurtz, Woodmere, and Joseph LiCausi, Port Jefferson Station, both of N.Y., assignors to BioResearch Inc., Farmingdale, N.Y.

Division of Ser. No. 256,152, Apr. 21, 1981, Pat. No. 4,405,309. This application Feb. 16, 1983, Ser. No. 466,979

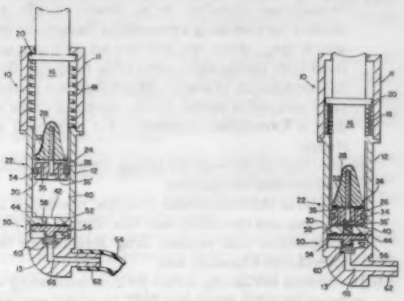
Int. Cl.³ A61M *1/00, 31/00*

U.S. Cl. 604—49 **3 Claims**

1. A method for relieving excess negativity in an inlet tube of a underwater drainage device adapted to be connected with a body cavity of a patient comprising the steps of:

connecting an air pump having a plunger and an air chamber with a drainage device so that a fluid passageway is provided between the air pump and the interior of the drainage device and the inlet tube,

connecting the inlet tube of the drainage device with a body cavity of a patient,



depressing the plunger of the air pump to force a volume of air defined by the air chamber into the drainage device, and

releasing the plunger to close the fluid passageway between the air pump and the interior of the drainage device and to open a passageway between the air chamber and atmospheric air.

4,484,909

PARENTERAL THERAPY USING SOLID DRUG

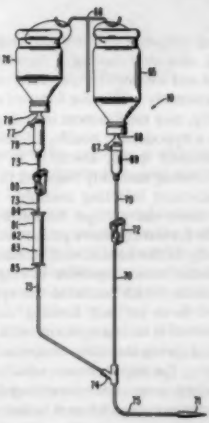
John Urquhart, Palo Alto, and Felix Theeuwes, Los Altos, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 325,206, Nov. 27, 1981, Pat. No. 4,432,756. This application Oct. 17, 1983, Ser. No. 542,688

The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—82 **9 Claims**



1. A parenteral delivery set for the administration of a beneficial drug formulation, the delivery set comprising:

(a) a primary tube for the flow of a parenterally acceptable fluid therethrough;

(b) a secondary tube for the flow of a parenterally acceptable fluid therethrough;

(c) a formulation chamber having means for communicating with the secondary tube, the formulation chamber comprising:

(1) a wall that surrounds an internal lumen;

(2) an inlet in the wall adapted for letting a parenterally acceptable fluid into the formulation chamber;

(3) a beneficial drug in solid dosage form presented in the formulation chamber in a therapeutically effective amount for executing a prescribed therapeutic program, which drug, when the delivery set is in use, is formulated with parenterally acceptable fluid that flows into the formulation chamber, which fluid is a pharmaceutically acceptable carrier for the drug and forms with the drug a formulation acceptable for parenteral administration;

(4) an outlet in the wall for letting drug formulation leave the formulation chamber;

(5) a film in the formulation chamber positioned between the drug and the outlet, said film formed of a polymeric composition that releases drug formulation from the formulation chamber; and,

(d) a common tub having means for communicating with the primary tube for receiving fluid from the primary tube, and for communicating with the formulation chamber for receiving drug formulation from the formulation chamber.

4,484,910

DUAL MODE AUTOMATIC INJECTOR

Stanley J. Sarnoff; George B. Calkins, both of Bethesda, and Claudio Lopez, Silver Spring, all of Md., assignors to Survival Technology, Inc., Bethesda, Md.

Filed Dec. 21, 1983, Ser. No. 563,767

Int. Cl.³ A61M *5/20*

U.S. Cl. 604—136 **8 Claims**

1. In a spring actuated injector comprising an elongated tubular housing assembly having a forward end adapted to engage a patient and a centrally apertured rear wall, a medicament injecting assembly within the forward end portion of said housing assembly, said medicament injecting assembly including a container, a hypodermic needle, a liquid medicament and a plunger, a stressed spring assembly in the rearward end portion of said housing assembly disposed in operative relation with said medicament injecting assembly for operating the latter so as to move the plunger forwardly within the container, the needle forwardly into a patient, and the liquid medicament outwardly of the needle, said stressed spring assembly including releasable means operable in response to a manual actuating procedure which included the application of a forwardly directed force on said housing assembly while the forward end thereof is in engagement with the patient to release said stressed spring assembly to operate said medicament injection assembly, the improvement which comprises

dual mode safety means for preventing the release of said releasable means except when it is desired to operate said medicament injecting assembly,

said dual mode safety means including a first part including pin means disposed in safety position extending through the central aperture in said rear wall in release preventing relation with said releasable means for removal therefrom in response to a relative rearward movement with respect to said rear wall so as to permit an actuating movement to release said releasable means,

said first part including an automatic mode portion fixed to the rearward end of said pin portion, said automatic mode portion being of a size greater than said pin means but less than said rear wall so as to present a forwardly facing surface spaced rearwardly from said rear wall operable to be engaged by a holding member of an automatic actuating system while a moving member of such system is moved forwardly into engagement with the rear wall to provide both a relative rearward removal movement for said pin means and an actuating movement for said releasable means,

said dual mode safety means including a separate second part and connecting means acting between said first and second parts for (1) enabling said second part to be connected with said first part while the pin means of the latter is in said safety position in a manual mode position wherein said first part is in rearward motion transmitting relation to said second part and (2) enabling said second part to be removed from said manual mode position while the pin means of said first part is retained in said safety position,

Said second part including a manual mode cap member of a size and shape to be conveniently manually grasped by a user and moved rearwardly with respect to said housing assembly in order to effect the removal of the pin means from said safety position when said second part is in manual mode position.

4,484,911

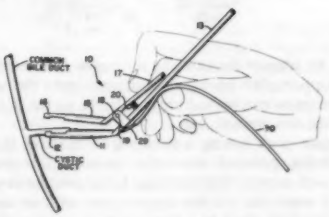
CANNULA AND CLAMP DEVICE

Richard B. Berlin, 309 Engle St.; Stephen L. Javna, 163 Engle St., and Richard B. Berlin, Jr., 309 Engle St., all of Englewood, N.J. 07631

Filed Sep. 29, 1982, Ser. No. 428,138

Int. Cl.³ A61B *17/00*

U.S. Cl. 604—174 **12 Claims**

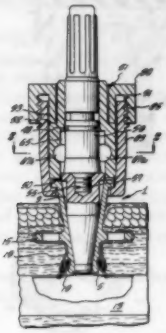


1. A cannula and clamp device adapted for operative cystic duct cholangiography comprising (1) a first jaw member with an extended shaft; (2) a second jaw member with an extended shaft which is coextensive and movably connected to said first jaw member wherein the gripping ends of the jaw members in contacting proximity form an annular open-ended cross-section; (3) biasing means for urging said jaw members into contacting proximity; and (4) a cannula which is attached to and inwardly supported by the first jaw member, wherein the injection end of the cannula is rigidly positioned and centered in the annular cross-section formed by the gripping ends of the jaw members, and the feed end of the cannula extends rearwardly and outwardly from the first jaw member; and wherein the jaw members and the extended shafts are angled in a coextensive non-linear configuration.

4,484,912
ATRAUMATIC BLOOD ACCESS DEVICE SEALING MECHANISM

Donald A. Raible, Santa Ana, Calif., assignor to Bentley Laboratories, Irvine, Calif.

Division of Ser. No. 158,063, Jun. 9, 1980, Pat. No. 4,349,021.
This application Apr. 27, 1982, Ser. No. 372,122
Int. Cl.³ A61M 5/00
U.S. Cl. 604—175 10 Claims



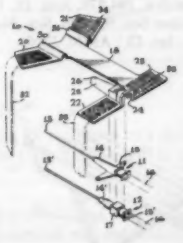
1. An atraumatic blood access device sealing mechanism for operation within a blood passageway of a blood access device having an external rim, said blood passageway adapted to connect a blood vessel within a body to the body exterior, said sealing mechanism comprising,

a retaining cap and a retaining cap ring for engaging therewith and securing said retaining cap to said blood access device, said retaining cap ring having an aperature therethrough and a restraining shoulder for slidably engaging said blood access device external rim, said retaining cap having a cap base for engaging said blood access device external rim thereby forcing, in opposed directions on either side of said external rim, said retaining cap and said blood access device together upon engaging said retaining cap and retaining cap ring.

4,484,913
MEDICAL DEVICE ASSEMBLY HOLDER

Donald A. Swauger, 20706 Alaminos Dr., Saugus, Calif. 91350

Filed Sep. 27, 1982, Ser. No. 424,002
Int. Cl.³ A61M 5/00
U.S. Cl. 604—179 1 Claim



1. In a unitary one-piece integral medical device holder for use in combination with a specially shaped medical device assembly comprising the combination of:

an elongated base;

at least a pair of support members outwardly extending from each end of and integral with said base in fixed, parallel spaced apart relationship;

means integrally carried on a selected one of said support members adjacent to and laterally disposed with respect to said base for releasably holding said medical device assembly thereon;

means carried on said support members for detachably connecting said base to a body portion of a user;

tubing retainers integrally carried at a junction between said support members and said base for removably connecting with said medical device assembly;

said releasable holding means being a shaped structure having an open recess conforming to the configuration of said medical device assembly;

snap-lock means integral with said structure and cooperatively disposed between said structure and said medical device assembly for detachably connecting said medical device assembly to said structure so as to be laterally of and adjacent to said base;

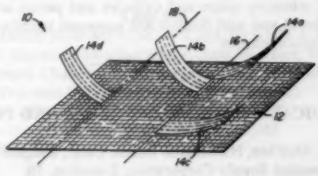
said detachable connection means include a pair of straps and hook and pile fastener arrangements carried on opposite sides of said support members and cooperating to be releasably coupled together; and

said shaped structure provided in said selected one of said support members is provided with a shaped recess therein for insertably receiving a portion of said medical device assembly having a conformal shape therewith.

4,484,914
INTRAVENOUS CATHETER RESTRAINT

Curtis W. Brown, 387 Chevy Chase Dr., Reno, Nev. 89509

Filed Sep. 7, 1982, Ser. No. 415,049
Int. Cl.³ A61M 25/02
U.S. Cl. 604—180 4 Claims



1. A catheter restraint for securing a catheter and catheter connecting tubing to a patient's skin, said restraint consisting of:

a flexible backing having a pressure-sensitive adhesive on one surface thereof for securing to the patient's skin, the opposite surface of the backing being non-adhesive;

at least three elongate, flexible strips, each having a pressure-sensitive adhesive on one surface thereof and being attached at one end to the non-adhesive surface of the flexible backing in a straight line with at least two of said strips being located adjacent each other along said line and having their adhesive surfaces facing in opposite directions so that the said two strips are capable of wrapping around the catheter and adhering to the non-adhesive surface of the backing on opposite sides of the catheter; and

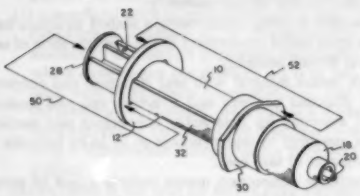
at least one additional, elongate, flexible strip located along a second line spaced apart from the first so that a loop may be formed in the catheter tubing which is secured to the backing.

4,484,915

MEDICAL SYRINGE

John A. Tartaglia, 108 Stoddard Rd., Waterbury, Conn. 06708

Filed Mar. 28, 1983, Ser. No. 479,720
Int. Cl.³ A61M 5/00
U.S. Cl. 604—227 **4 Claims**



1. A medical syringe adapted for one hand operation in both aspiration and injection modes, said syringe comprising:

an elongated hollow cylinder having at one end a first external flange having cut out regions and extending at right angles to the axis of the cylinder and an opening for receiving a piston, the opposite end of the cylinder having means adapted to detachably receive a hypodermic needle:

a piston somewhat longer than the cylinder which extends slidably through said opening and is aligned with and centered on the axis of the cylinder, there being a liquid tight seal between said piston and said cylinder, one end of said piston being disposed outside said cylinder, said one end being enlarged and designated as a head, whereby when said cylinder and piston are held in one hand and said first flange and head are squeezed together, injection action ensues; and

a device slidable back and forth along the outer surface of the cylinder, said device including a second flange extending at right angles to said axis and second flange extension members extending from the second flange slidably through the regions of said first flange and engaging said head whereby when said cylinder and piston are held in one hand and said flanges are squeezed together, aspiration action ensues.

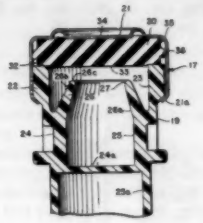
4,484,916

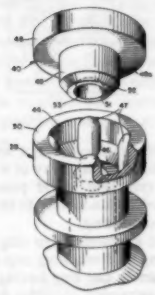
MEDICAL SOLUTION CONTAINER AND PORT CONSTRUCTION

Charles J. McPhee, Huntington Beach, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jan. 20, 1982, Ser. No. 340,899
Int. Cl.³ A61M 5/00
U.S. Cl. 604—256 **27 Claims**

1. A medical solution container formed of flexible thermoplastic material having a tubular neck projecting away from said container and defining an outlet portion for receiving and retaining the spike of an administration set, said neck having a proximal end merging with said container and a distal end opposite from said proximal end and remote from said container, said distal end including a distal wall portion providing an enlarged cylindrical bore and said proximal end including a proximal wall portion providing a reduced coaxial cylindrical bore, a tapered annular collar disposed within said neck and formed integrally therewith, said collar extending distally from said proximal wall portion into said enlarged bore, said collar also having an inner surface merging proximally with the surface of said reduced cylindrical bore and having an outer surface spaced inwardly from the surface of said enlarged cylindrical bore, said inner and outer surfaces of said tapered collar both sloping inwardly and distally with said outer surface having a greater acute angle of slope, said neck having an annular sealing surface at its distal end, an elastomeric sealing disc engaging said sealing surface, and a tear-off cap detachably affixed to said neck and retaining said disc in place against said sealing surface, said elastomeric sealing disc having planar faces and a generally cylindrical side surface, said disc also having an integral circumferentially-extending rib projecting outwardly from said surface, said rib being spaced equal distances from said planar faces and having a diameter in an undeformed state greater than the outside diameter of said neck, said tear-off cap retaining said disc with one of the planar faces thereof in liquid-tight sealing engagement with said end surface of said neck, said cap also having an inside surface engaging said rib.



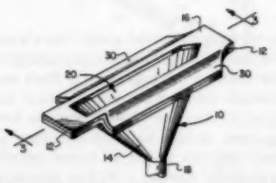


4,484,917

FEMALE EXTERNAL CATHETER

Gene D. Blackmon, Dallas, Tex., assignor to The Dallas Venture, Dallas, Tex., a part interest

Continuation of Ser. No. 294,979, Aug. 21, 1981, abandoned. This application Sep. 9, 1983, Ser. No. 531,160
Int. Cl.³ A61M 1/00
U.S. Cl. 604—327 **3 Claims**



1. A pliable flexible external catheter adapted to be affixed to a female human subject having normal external urogenital structures, said catheter comprising:

a main body of said catheter having an elongated stabilizer and a longitudinal axis;

an elongated inlet transverse to the longitudinal axis of said main body of said catheter;

a horizontal and substantially planar first adhesive surface means surrounding and extending from said inlet and on the elongated stabilizer, said first adhesive surface means being adapted to surround and hold the subject's labium minora in said main body through said inlet, and to sealingly engage the catheter to said subject between opposing labium majora and labium minora, extending anteriorly to seal about the clitoris and posteriorly to the fourchette;

the elongated stabilizer having two opposing transverse sides and two opposing ends, each supporting said first adhesive surface means;

a second adhesive surface means offset from said first adhesive surface means and cooperating therewith for sealingly engaging the catheter to said subject;

support means for supporting said second adhesive surface means comprising arcuately downwardly curved and laterally extending shoulders projecting from each of the opposing sides of said elongated stabilizer obliquely away from said inlet at an arcuate curve in relation to said main body; and

an outlet tube connected to the main body of said catheter opposite said inlet.

4,484,918

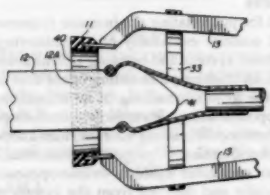
METHOD AND TOOL FOR EXPANDING A RESILIENT RING FOR SLIDING OVER AND POSITIONING ON A PENIS FOR ANCHORING A RESILIENT CATHETER THERETO

Herbert A. Omley, P.O. Box L-2, Wickenburg, Ariz. 85358

Division of Ser. No. 332,938, Dec. 21, 1981, Pat. No. 4,416,275. This application Jul. 25, 1983, Ser. No. 516,927

Int. Cl.³ A61F *5/44*

U.S. Cl. 604—349 **4 Claims**



1. An annular ring for mounting on a shaft of a penis for use in attaching a urine receptacle thereto in a leakproof manner comprising:

an elastic ring,

said ring having a plurality of close ended slot means spacedly arranged around one end surface thereof to extend into said ring longitudinal of its length and intermediate the interior and exterior surface,

said slot means penetrating means the body of said ring far enough so that they can receive fingers of a medical instrument which will expand said ring a predetermined amount,

said ring being provided with an adhesive surface around its inner peripheral surface for adhering to the penile shaft.

4,484,919

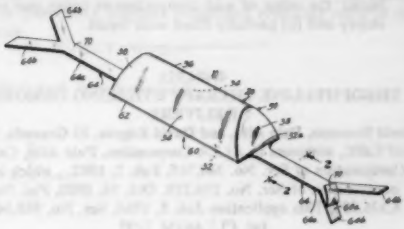
RECTAL AREA DRESSING

Norman Sohn, Englewood, N.J.; Michael A. Weinstein, Scarsdale, and Richard D. Robbins, New York, both of N.Y., assignors to Affiliated Surgical Supplies, Englewood, N.J.

Filed Oct. 25, 1982, Ser. No. 436,192

Int. Cl.³ A61F *13/16*

U.S. Cl. 604—358 **19 Claims**



1. A rectal area dressing for controlling discharge from the rectoperineal body portion, said rectal dressing being adapted for positioning within the natal cleft in the perineum portion of a person's body, said rectal dressing comprising:

(a) an elongated absorbent pad configured to conform to the contour of the natal cleft for close fitting relation therewith, said elongated absorbent pad having a substantially triangular cross-section, including a generally planar base surface, contiguous planar side surfaces, and a longitudinally extending apical surface, said planar side and apical surfaces being adapted for resilient and conforming positioning within the natal cleft, said base surface extending exteriorly of said natal cleft;

(b) non-permeable backing means integral with the base surface of said absorbent pad for retaining rectoperineal discharge within said absorbent pad; and

(c) means for fastening said absorbent pad within the natal cleft in sealing and conforming relation therewith.

4,484,920

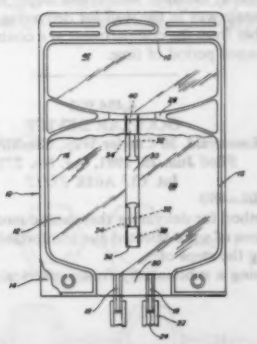
CONTAINER FOR MIXING A LIQUID AND A SOLID

Stephen B. Kaufman, Heather Ridge; John W. Hart, Winnetka, and Richard Chamernik, Waukegan, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 6, 1982, Ser. No. 366,023

Int. Cl.³ B65D *30/22*; A61M *5/00*

U.S. Cl. 604—416 **1 Claim**



1. A container adapted for the mixing of a liquid and a solid initially placed in separate compartments, without opening the container to be exterior, said container comprising:

a flat-collapsible container defining a pair of walls sealed together by seal lines, some of said seal lines passing transversely across said container to define a pair of compartments, a tube communicating between said pair of compartments through said seal line, said tube being sealed at both end with seal means openable from outside of said container to permit flow communication between said compartments through said tube when opened, said tube containing said solid and one compartment containing said liquid, the other of said compartments being one of (a) empty and (b) partially filled with liquid.

4,484,921

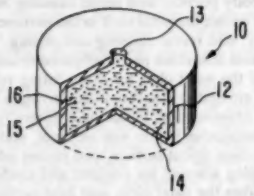
THEOPHYLLINE THERAPY UTILIZING OSMOTIC DELIVERY

David Swanson, Palo Alto, and David Edgren, El Granada, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 344,785, Feb. 1, 1982, , which is a continuation of Ser. No. 196,219, Oct. 14, 1980, Pat. No. 4,326,525. This application Jan. 5, 1984, Ser. No. 568,546

Int. Cl.³ A61M *7/00*

U.S. Cl. 604—892 **4 Claims**



1. An oral, osmotic device for the controlled delivery of a beneficial drug comprising:

(a) a shaped wall formed of a member selected from the group consisting of cellulose acylate, cellulose diacylate, cellulose triacylate, and mixtures thereof, which wall is permeable to the passage of an external fluid and substantially impermeable to the passage of drug, the wall surrounding and forming:

(b) a compartment containing the beneficial drug selected from the group consisting of theophylline, theophylline sodium glycinate and theophylline potassium glycinate, and a buffer acid that is soluble in fluid imbibed into the compartment and provides an environment in the compartment of the osmotic device that aids in the delivery of the theophylline member from the osmotic device, the buffer acid a member selected from the group consisting of fumaric, succinic, maleic and lactic; and,

(c) a passageway in the wall for delivering the theophylline member from the compartment at a controlled rate over a prolonged period of time.

4,484,922

OCCULAR DEVICE

Peter L. Rosenwald, 38 Currier Way, Cheshire, Conn. 06410

Filed Jun. 25, 1981, Ser. No. 277,188

Int. Cl.³ A61K *27/12*

U.S. Cl. 604—893 **3 Claims**

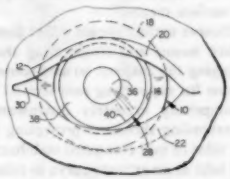
1. A method for delivering therapeutic medications directly to the cornea of a pre-selected eye comfortably and efficiently, comprising the steps of:

A. forming a substantially frusto-spherical, continuous, annular-shaped body from non-allergenic material, insoluble in lacrimal fluids with

a. the edges of said body being defined by two concentric circles, and

b. the annular eye-contacting surface between said concentric circles substantially conforming to the overall curvature of the sclera of the pre-selected eye,

B. forming the inside, edge-defining concentric circle of said annular-shaped body with a diameter slightly larger than the diameter of the corneal-scleral junction of the pre-selected eye;



C. diffusing therapeutic medication throughout the annular body for retension therein and subsequent diffusion to the cornea of the pre-selected eye; and

D. fitting the medication-containing annular body to the pre-selected eye with the inside circular edge thereof peripherally surrounding the corneal-scleral junction in close, juxtaposed spaced relationship, without intruding therein,

whereby an ophthalmic delivery vehicle is attained which assures delivery of medication directly to the cornea of the eye, effectively and efficiently, while also being highly comfortable to the wearer.

4,484,923

METHOD FOR ADMINISTERING IMMUNOPOTENTIATOR

Alfred A. Amkraut, and Agusto B. Martins, both of Palo Alto, Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 361,895, Mar. 25, 1982, Pat. No. 4,439,199, which is a continuation of Ser. No. 122,124, Feb. 19, 1980, abandoned. This application Jan. 5, 1984, Ser. No. 568,456

Int. Cl.³ A61L *15/06*

U.S. Cl. 604—894 **4 Claims**

1. A method for potentiating the immune response of a host, which method consists essentially of administering to a host having an immune system and needing potentiation of its immune response, an immunopotentiating agent that is a member selected from the group consisting of an immunopotentiating lipid, immunopotentiating levamisole, immunopotentiating cord factor, immunopotentiating tilorane, immunopotentiating saponin, immunopotentiators prepared synthetically and derived from the endocrine system, immunopotentiators prepared synthetically and derived from the lymph system and immunopotentiators prepared synthetically and derived from the reticuloendothelial system, and wherein said agent is administered from a therapeutic delivery system that limits the contact of the host with the agent until the agent is released from the system, thereby lessening the incidence of local inflammation, fever and adverse biological response of the host to the agent, which agent is administered at a controlled rate and continously in a therapeutically effective amount of at least one picogram for a prolonged period of time for potentiating the immune response.

4,484,924

PROCESS FOR PRODUCING UNHAIRED, STORABLE HIDES AND SKINS

Ernst Pfleiderer, Darmstadt-Arheilgen; Tilman Taeger, Griesheim, and Rolf Monsheimer, Darmstadt-Eberstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jun. 20, 1983, Ser. No. 505,782

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1982, 3224881

Int. Cl.³ C14C *1/06, 1/08*

U.S. Cl. 8—94.17 14 Claims

1. A process for producing unhaired skins and hides, free of opening of the hide structure, as intermediate products storable for an extended time period prior to subsequent treatment to open the hide structure and to make the skins and hides suitable for subsequent tanning, which process comprises washing flayed skins and hides to remove adhering dirt, soaking said skins and hides, freeing said skins and hides of hair and scud with a short term unhairing carried out in the alkaline pH region for ½ hour to 6 hours with little or no opening of the hide structure, reversing the swelling of said skins and hides and neutralizing them to interrupt whatever opening of the hide structure has occurred, and then curing said skins and hides with salt under neutral conditions to produce said storable intermediate products, said skins and hides being mechanically fleshed either after washing or at some later time in the process as recited.

4,484,925

TANNING METHOD DESIGNED TO MAKE LEATHERS MYCOSTATIC, ANTIMYCOTIC, AND ANTIFUNGAL, AND THE RESULTING PRODUCTS

Joël Roux, Le Grand Parc - Rue Loire, 26100 Romans, and Auguste Grawitz, 16, Avenue de la Saulaie, 38160 St. Marcellin, France

Filed May 11, 1983, Ser. No. 493,727

Claims priority, application France, May 12, 1982, 82 08615

Int. Cl.³ C14C *3/04, 3/02*

U.S. Cl. 8—94.26 9 Claims

1. Leathers and hides having biostatic properties with no migration of the active agent, having fixed in situ formed non-soluble basic metallic complexes, and on which have been fixed at least one biocidal agent.

4,484,926

ANTISTATIC FABRICS INCORPORATING SPECIALTY TEXTILE FIBERS HAVING HIGH MOISTURE REGAIN

Sheldon M. Atlas, New York, N.Y., assignor to Peter Risenwald, New York, N.Y., a part interest

Division of Ser. No. 461,514, Jan. 27, 1983, Pat. No. 4,443,515. This application Dec. 16, 1983, Ser. No. 561,983

Int. Cl.³ D06Q *1/02*

U.S. Cl. 8—115.5 5 Claims

1. A hydrophilic fiber which comprises a linear hygroscopic homopolymer of a monomer selected from the group consisting of alpha, beta-ethylenically unsaturated carboxylic acids, alpha, beta-ethylenically unsaturated sulfonic acids, hydroxyalkyl esters of these acids, and hydroxyglycidyl esters of these acids, said polymers having a molecular weight in the range of from about 100,000 to 500,000, a softening point in the range of from about 210° C. to about 245° C., and a glass transition temperature T_g above about 115° C., said polymer in the formed fiber being cross-linked at a cross-linking density in the range of one chemical cross-link bond per from about 40 to about 100 repeating monomeric units of said polymer, said fibers being capable of absorbing up to about 50% by weight of the fiber of moisture without lose of mechanical strength and other textile properties.

4,484,927

POLYMERS USEFUL FOR IMPROVING THE FASTNESS OF DYES AND OPTICAL BRIGHTENERS ON HYDROXY GROUP-CONTAINING SUBSTRATES

Salvatore Valenti, Binningen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 376,902, May 10, 1982, Pat. No. 4,436,524. This application Jan. 25, 1984, Ser. No. 573,648

Int. Cl.³ C08L *79/00;* D06M *15/52;* D06P *5/02*

U.S. Cl. 8—554 15 Claims

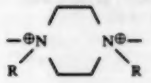
1. A quaternary polymer containing repeating units of the formula

$$-W-Y-Z-Y-W-X_1-$$

in which each W independently

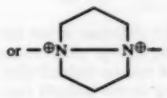
(a)

(b)



(c)

(d)



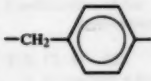
in which each

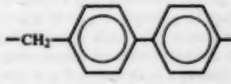
R, independently, is C_{5-6}cycloalkyl, C_{1-20}alkyl; C_{1-20}alkyl monosubstituted by —OH, —CN, R_1O—, R_1S—, R_1CO—, or —$CON(R_2)_2$; C_{1-4}alkyl monosubstituted by —COOH or arylsulphonyl or mono- or di-substituted by —$COOR_1$; phenyl or benzyl unsubstituted or substituted by up to 3 groups selected from R_1—, R_1O—, —OH, —CN, halogen and —COOH; or both groups R on a single nitrogen atom, together with the nitrogen atom to which they are attached, form a 5- or 6-membered ring;

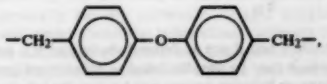
R_1 is C_{1-4}alkyl;

R_2 is hydrogen, C_{1-4}alkyl or C_{1-4}alkyl monosubstituted by —OH, aryl or C_{1-4}alkoxy;

X_1 is X_{1a}, where X_{1a} is $-C_nH_{2n}-$, $-CH_2O-R_3-OCH_2-$, $-CH_2(OR_4)_yOCH_2-$, $-CH_2COCH_2-$, $-CH_2CHOHCH_2-$,







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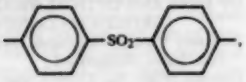
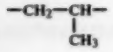
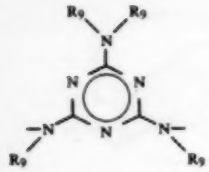


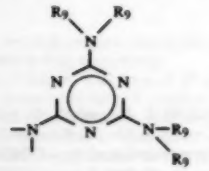
or $—CH_2CHOHCH_2—N^{\oplus}(R_1)_2.CH_2CHOHCH_2]_x$ *in which*
R_3 is a straight chain or branched C_{2-12}alkylene group, unsubstituted or substituted with up to 3 halogen atoms,
R_4 is $—CH_2CH_2—$,



or $—CH_2)_4$,
n is 2 to 12, p is 2 to 15; and x is 1 to 5;
each Y, independently, is arylene, aralkylene, alkarylene, oxyarylene or C_{1-15}alkylene, which may be interrupted by up to 7 oxygen or 3 quaternary nitrogen atoms and may be substituted by up to 3 —OH or $—OR_1$ groups, and
Z is a bridging group of formula (e) or (f)

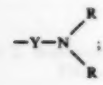


(e)

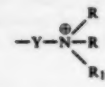


(f)

in which
R_5 is a direct bond, C_{1-12}alkylene, C_{1-12}alkylene interrupted by up to 3N or O atoms, arylene, diaminoarylene or dioxyarylene,
R_6 is C_{1-12}alkylene or C_{2-12}alkylene interrupted by up to 3N, O or S atoms,
R_7 is arylene,
R_8 is C_{1-12}alkylene or arylene, and
each R_9 independently is hydrogen, C_{1-20}—alkyl, unsubstituted or substituted by up to 3 hydroxy, C_{1-4}alkoxy or halogen groups,
a group,



or a group



in which Y and R are as defined above and R_{10} is C_{1-20}alkyl which may be unsubstituted or substituted by up to 3 hydroxy or halogen groups and/or may be interrupted by up to 3 —O—, —S—, $—NR_{11}—$ or $—N^{\oplus}(R_1)_2—$ groups, where R_{11} is hydrogen or C_{1-4}alkyl and R_1 is C_{1-4}alkyl.

4,484,928

METHODS FOR PROCESSING COAL

Douglas V. Keller, Jr., Lafayette, N.Y., assignor to Otisca Industries, Inc., Syracuse, N.Y.

PCT No. PCT/US82/00732, § 371 Date May 27, 1982, § 102(e) Date May 27, 1982, PCT Pub. No. WO83/04189, PCT Pub. Date Dec. 8, 1983
PCT Filed May 27, 1982, Ser. No. 425,079
Int. Cl.³ C10L *9/10*; B03D *3/06*
U.S. Cl. 44—1 SR **26 Claims**

1. A process of preparing a low ash coal from a composite of coal and mineral matter, said method comprising the steps of: reducing said composite to a particle size distribution such that said composite can be slurried; mixing said composite with an aqueous liquid in an amount sufficient to form a slurry of said composite; comminuting said composite while in said slurry to a size consist such that the composite is resolved into separate particulate phases of coal and hydrophilic mineral matter and said mineral matter is dispersed in the aqueous carrier of the slurry; thereafter mixing with said slurry a liquid agglomerating agent which: has a high interfacial tension with water and a low viscosity, is capable of being adsorbed onto the surfaces of the coal particles to render them more hydrophobic without effecting the hydrophilicity of the mineral matter, and is selected from the group consisting of:
1,1,2-trichloro-1,2,2-trifluoroethane,
pentane
trichlorofluoromethane, and
2-methylbutane;
agitating the resulting mixture without more than incidental further comminution of the coal, thereby effecting a separation of said coal particles from said aqueous liquid and the mineral matter dispersed therein and a coalesence of said coal particles into product coal agglomerates; and recovering said agglomerates from said slurry.

4,484,929

SOLID FUEL OIL MIXTURES

Paul R. Rutter, Richmond, and Christopher J. Veal, Wimbledon Chase, both of England, assignors to The British Petroleum Company p.l.c., London, England

Filed Oct. 5, 1982, Ser. No. 432,963
Claims priority, application United Kingdom, Oct. 30, 1981, 8132729
Int. Cl.³ C10L *1/32*
U.S. Cl. 44—51 **3 Claims**

1. A stable fuel composition consisting essentially of (a) 45.7% by weight of particles of a coal, (b) an additive composition in an amount 0.2% by weight, said additive being the combination of maleinised polybutadiene in an amount of 0.1% by weight and a surfactant which is a mixture of 0.05% by weight of methylbis(2-hydroxylethyl) alkyl chloride ammonium compound and sodium bis tri decyl sulfosuccinate and (c) fuel oil being the remaining component.

4,484,930

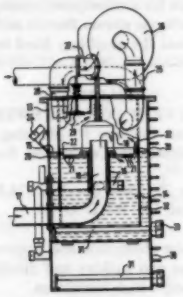
GAS PRODUCER

Willy I. A. J. Evrard, Place des Tilleuls 19, B5220, Andenne, Belgium

Filed Aug. 20, 1982, Ser. No. 410,075
Claims priority, application Belgium, Aug. 25, 1981, 890080
Int. Cl.³ C10J *3/20, 3/84*
U.S. Cl. 48—76 **3 Claims**

1. Apparatus for producing gas, comprising in series a fuel store hopper, a furnace supplied with air, means for treating the gas produced comprising in series at least one lamellar filtration apparatus, a washing apparatus and a centrifuging apparatus, and means for supplying a gas engine, wherein the

store hopper is located above the furnace and a lower portion of the hopper, proximal of the furnace has a cross-section which tapers towards the furnace, said lower portion adjacent the furnace having the same shape as an upper end of the furnace, but having lateral dimensions less than the laterial dimensions of the upper end of the furnace, means defining an opening are arranged in the space separating the lower portion of the hopper and the upper end of the furnace to allow the transmission of heat from the furnace to the walls of the lower portion to heat said walls; said gas treatment means comprises a watertight vessel partially filled with water, a pipe for introducing gas into said vessel, the section of the pipe near the exit of the gas being of substantially cylindrical section and in a substantially vertical position and opening upwards, a bell housing having a longitudinal axis substantially vertical being disposed above the top opening of said pipe and the internal cross-section of said bell housing being larger than the external



cross-section of said pipe, said bell housing being provided around its base with means for floating the bell on the surface of the water contained in said vessel, said vessel being further provided with means for the introduction and draining of water, a device for maintaining the water at a constant level in the vessel, and, at the top, with means for drawing off the gas.

2. The apparatus of claim 1 wherein the lamellar filtration apparatus comprises protruding rings provided on the water contacting surface of the floating means, said rings having a diameter greater than the diameter of the inlet gas pipe, the bell housing is provided at the part of its base at the furthest distance from the longitudinal axis with a flat ring projecting from the bell housing and situated just near and above the floating surface, the means for drawing off the gas is in the form of a blower or fan and in which the gas treatment means includes means for recirculating to the vessel, gas coming from the vessel and which is not passed on to the engine.

4,484,931

THREAD GRINDER

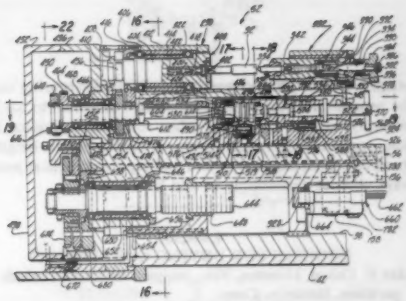
Anthony Kushigian, P.O. Box 768, Hendersonville, N.C. 28739

Division of Ser. No. 222,501, Jan. 5, 1981, Pat. No. 4,393,624. This application Apr. 21, 1983, Ser. No. 487,281

Int. Cl.³ B24B 3/22

U.S. Cl. 51—95 TG **10 Claims**

1. A machine for grinding workpieces comprising a base, a wheelhead carried by said base and constructed and arranged to rotate a grinding wheel for grinding a workpiece, a workhead constructed and arranged to releasably receive and rotate a workpiece, a table carrying said workhead and carried by said base for reciprocating the workpiece generally longitudinally with respect to the grinding wheel, a lead screw carried by one of said base and said table, a nut threadily engaging said lead screw and nut for rotation therewith, a driven metric gear connected to said one of said lead screw and nut for rotation therewith, a driven English gear connected to said one of said lead screw and nut for rotation therewith, a drive disposed radially outwardly of said driven gears and in fixed circumferential and axial relationship with the axis of rotation of said driven gears, said first drive being constructed and arranged to releasably mount and journal for rotation a first gear driven in timed relationship with rotation of the workpiece carried by said workhead, a metric coupler disposed generally radially between said drive and said driven gears and constructed and arranged to be releasably secured in a range of circumferentially spaced positions about said metric driven gear, said metric coupler having a gear continuously meshed with said metric driven gear and being constructed and arranged to releasably mount and journal for rotation a second ratio gear to mesh with a first ratio gear received on said drive and to rotate in unison with said gear continuously meshed with said metric driven gear, and an English coupler disposed generally radially between said drive and said English driven gear and con-



structed and arranged to be releasably secured in a range of circumferentially spaced positions about said English driven gear, said English coupler having a gear continuously meshed with said English driven gear and being constructed and arranged to releasably mount and journal for rotation a second ratio gear to mesh with a first ratio gear received on said drive and to rotate in unison with said gear continuously meshed with said English driven gear, whereby a selected pair of a first and second ratio gears may be respectively mounted on said drive and on one of said couplers and said one coupler moved circumferentially to mesh such first and second ratio gears to thereby drive said table in a predetermined timed relationship with rotation of the workpiece to feed the workpiece generally longitudinally under the grinding wheel at the appropriate rate for the grinding wheel to produce on the workpiece a thread having a desired pitch.

4,484,932

SANDING WHEEL

John J. Mailand, Wyoming Township, Chisago County; Warren L. Langstraat, Cottage Grove, both of Minn., and Daniel D. Smith, Rankin County, Miss., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

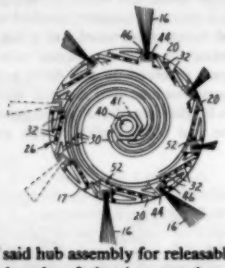
Continuation of Ser. No. 309,898, Oct. 9, 1981, abandoned. This application Dec. 14, 1983, Ser. No. 561,988

Int. Cl.³ B24D 9/06

U.S. Cl. 51—335 **8 Claims**

1. A sanding wheel adapted to sand irregular surfaces, said wheel comprising: a hub assembly having an axis, a periphery around said axis having a plurality of radially extending, circumferentially spaced slots, and means adapted for engagement by a drive motor to afford rotation of said hub assembly about said axis in a first direction; a plurality of flexible support members having one end fixed on said hub assembly and projecting generally radially outwardly of said periphery with each of said support members being closely adjacent the side of one of the slots that trails when said hub assembly is rotated in said first direction; a plurality of separate and nonconnected lengths of flexible abrasive-coated material each extending through one of the slots having an outer projecting end portion

projecting along the adjacent support member, and having an inner end portion within the hub assembly, said hub assembly defining separated passageways for the inner end portions of said lengths of abrasive-coated material, which passageways are interleaved with each other and are helically disposed about said axis; and a separate means positioned adjacent the



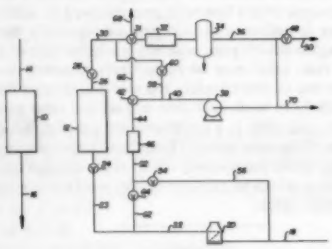
periphery of said hub assembly for releasably securing each of the separate lengths of abrasive-coated material to said hub assembly, and for affording, when released, individual insertion, removal and repositioning of said separate lengths of abrasive-coated material within said separated helical passageways without disassembly of said hub.

4,484,933

PROCESS FOR DRYING GAS STREAMS

Alan P. Cohen, Houston, Tex., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 14, 1983, Ser. No. 504,148
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—25 **4 Claims**



1. In the process for drying a feedstock gas stream containing at least 1 ppm (v) water vapor wherein the gas stream is passed through a first primary fixed adsorbent bed of zeolitic molecular sieves to selectively adsorb the water vapor and recover an effluent gas stream of reduced water content, periodically diverting the feedstock gas stream to a second primary fixed adsorption bed containing regenerated molecular sieve adsorbent wherein adsorptive drying of the feedstock is continued and the first primary adsorption bed is purge desorbed using a heated non-sorbable purge gas stream and thereafter cooled in preparation for having the feedstock gas stream diverted thereinto for the drying of an additional portion thereof, the improvement which comprises cyclically passing the heated non-sorbable purge gas stream through the first primary adsorption bed in a direction counter-current to the direction of flow of the feedstock gas stream therethrough and subjecting the effluent from said bed to the sequence of treatments comprising

(a) decreasing the temperature of said effluent at least 75° C.;

(b) passing the cooled gas phase through an auxilliary fixed bed containing activated zeolitic molecular sieve whereby essentially all of the water vapor present therein is adsorbed; and

(c) heating the effluent gas stream from said auxilliary fixed bed to the temperature desired for regeneration of the first primary fixed adsorption bed, and passing the heated gas stream into the first primary fixed bed to complete the cycle;

continuing the aforesaid cyclic purge desorption until the desired degree of bed regeneration is accomplished and thereafter cooling the first primary fixed adsorption bed and simultaneously at least partially regenerating the auxilliary fixed bed by passing a cool non-sorbable gas stream through the first primary fixed bed in a direction counter-current to the direction of cyclic flow of heated purge gas therethrough and passing at least a portion of the heated effluent therefrom through the auxilliary fixed bed, the quantity of said cool non-sorbable purge gas being sufficient to cool the first primary fixed bed to the desired temperature for a subsequent resumption of adsorption-drying of feedstock gas stream therein and sufficient to at least partially regenerate the auxilliary fixed bed.

4,484,934

PHYSICAL SOLVENT FOR GAS SWEETENING

Charles R. Ferrin, and William P. Manning, both of Sand Springs, Okla., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 27, 1984, Ser. No. 574,311
Int. Cl.³ B01D *53/14*
U.S. Cl. 55—32 **3 Claims**

1. The process for the absorption and removal of hydrogen sulfide and mercaptans and sulfides and disulfides and water from a mixture of gases, which comprises,

scrubbing the mixture of gases with N-2 methoxyethyl-2-pyrrolidone in an absorption zone in which the hydrogen sulfide and mercaptans and sulfides and disulfides and water are absorbed,

conducting the solvent containing the absorbed gases and water to a desorption zone,

liberating the absorbed gases and water from the solvent to thereby regenerate the solvent,

and recycling the regenerated solvent to the absorption zone.

4,484,935

PERMEATION MODIFIED MEMBRANE

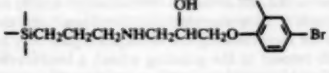
Anthony Zampini, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

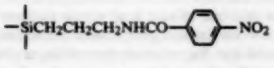
Filed Jun. 30, 1983, Ser. No. 509,612
Int. Cl.³ B01D *53/22*
U.S. Cl. 55—158 **9 Claims**

1. A multicomponent membrane for gas separations, comprising

a. a porous substrate membrane, and

b. a coating of poly(dimethyl siloxane) in contact with said membrane, said coating containing 1 to 20 parts per hundred, based on 100 parts of said poly(dimethyl siloxane), of a permeation modifying radical bonded to said poly(-dimethyl siloxane), said permeation modifying radical being selected from the group consisting of





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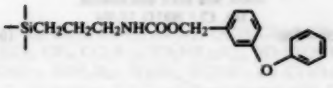

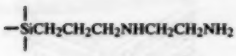

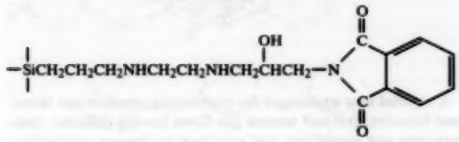

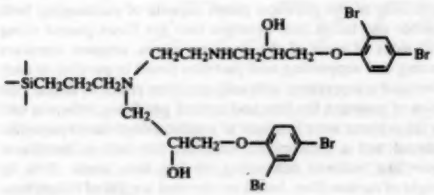

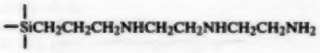

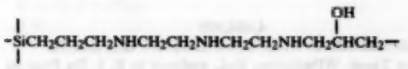

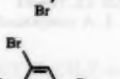

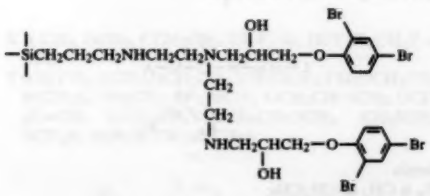

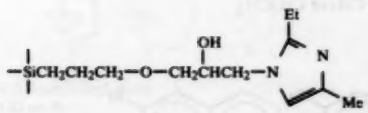

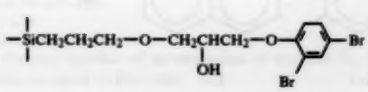

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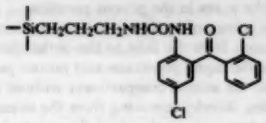
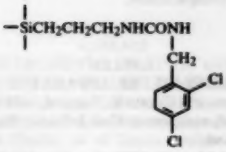
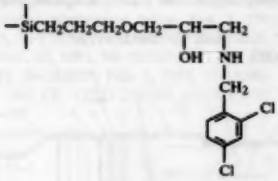
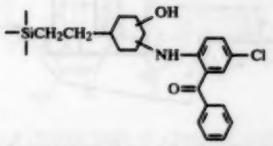








4,484,936

DEGASSING ASSEMBLY

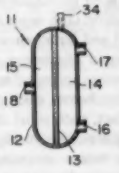
Hiromitsu Sakai, Kawanishi, Japan, assignor to C. Uyemura & Co., Ltd., Osaka, Japan

Filed Apr. 15, 1982, Ser. No. 368,745

Claims priority, application Japan, Apr. 21, 1981, 56-56533[U]

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—159 **3 Claims**



1. A degassing assembly for removing a degassed sample from a stream of bubbly liquid in order to introduce the degassed sample of the liquid into an analyzer or measuring device for the measurement of concentration and/or a physical property of the liquid, said assembly consisting of:

a closed vessel, and

a porous partition having interconnected pores located within said vessel and dividing the interior thereof into first and second compartments, the first compartment having an inlet and an outlet for the passage of the stream of bubbly liquid into and out of said first compartment and the second compartment having an outlet for the degassed

sample of the liquid, said first and second compartments being only in liquid communication with each other through the pores in the porous partition,

wherein the stream of bubbly liquid passes through the first compartment from the inlet to the outlet thereof while a portion of the liquid penetrates said porous partition from the first to the second compartment without accompanying bubbles, thereby removing from the stream of bubbly liquid the degassed sample which flows out of the outlet of the second compartment.

4,484,937

DUST FILTER APPARATUS

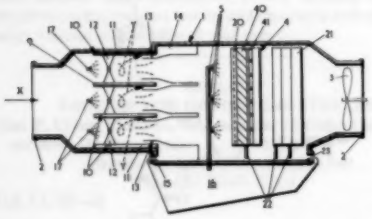
Granville C. James, and Gerald K. Burnard, both of Ashby-de-la-Zouch, England, assignors to Coal Industry (Patents) Limited, London, England

Filed Mar. 30, 1982, Ser. No. 363,685

Claims priority, application United Kingdom, May 29, 1981, 8116434

Int. Cl.³ B01D *47/12*

U.S. Cl. 55—223 **1 Claim**



1. Dust filter apparatus for use in underground mines comprising a generally horizontal duct having flanges at opposite ends thereof for connecting to ducting sections, a filter panel vertically mounted across a full width of the duct, the filter panel comprising a filter means for promoting air flow and liquid flow through the filter and downward along the filter, a vertical bank of liquid spraying means for spraying liquid onto an upstream face of the filter panel, liquid eliminator means vertically arranged in the duct downstream of the filter panel for reducing liquid carried beyond the filter panel, baffle plate means disposed below the filter panel and liquid eliminator means for preventing short-circuit of gaseous flow and allowing liquid to drain without re-entrainment by an air stream in the duct, a liquid collection tank mounted beneath the duct and beneath the filter panel and liquid eliminator means for receiving liquid from the liquid eliminator means and filter panel, plural swirl chamber means arranged in parallel across the duct for removing relatively heavy dust particles carried by air flowing through the duct, each swirl chamber means comprising a cylindrical casing, a swirl inducing means mounted across the casing and a spray means mounted upstream of the swirl inducing means for spraying liquid into air flowing through the casing and past the swirl inducing means for washing relatively heavy dust particles along the casing and an aperture around a downstream end of the casing for receiving coarse heavy dust particles and liquid from the casing and means for communicating the aperture with the tank for directing the coarse heavy dust particles and liquid from the swirl chamber casing to the tank, a pump connected to the tank for drawing liquid from the tank, a hydrocyclone separator connected to the pump for separating dust particles from liquid and connected to the tank for returning dirty water with dust particles to the tank and means connecting the hydrocyclone to the bank of liquid spraying means and to the spraying means in the swirl chamber means.

4,484,938

TOTAL HEAT EXCHANGER

Kunio Okamoto, and Akira Fukami, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

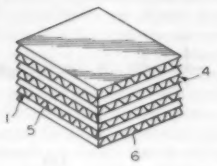
Filed Jan. 17, 1983, Ser. No. 458,462

Claims priority, application Japan, Jan. 28, 1982, 57-10857

The portion of the term of this patent subsequent to Mar. 22, 2000, has been disclaimed.

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—269 **10 Claims**



1. A total heat exchanger for exchanging sensible and latent heat between first and second gas flows having different temperatures and humidities, said total heat exchanger comprising a plurality of flat partition plates capable of exchanging both sensible and latent heat between two gas flows passed along both sides of each of the partition plates, support members spacing and supporting said partition plates in parallel to each other and cooperating with said partition plates to define two series of passages for first and second gas flows, wherein said partition plates are a laminate of a carbon-fiber-based paperlike material and a hydrophilic material, the carbon-fiber-based paper like material containing no less than about 20% by weight of carbon fiber, based on the total weight of the carbon-fiber-based paper like material.

4,484,939

HERBICIDAL SULFONAMIDE INNER SALTS

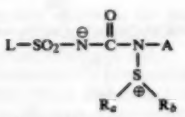
Chi-Ping Tseng, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 467,650, Feb. 18, 1983, abandoned. This application Nov. 16, 1983, Ser. No. 551,004

Int. Cl.³ A01N *43/02*; C07D *239/22*

U.S. Cl. 71—92 **22 Claims**

1. A compound of the formula:

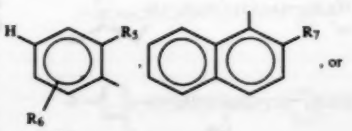


wherein

R_a is CH_3 or CH_2CH_3;

R_b is CH_3 or CH_2CH_3;

L is



L-1 L-2

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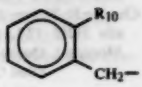
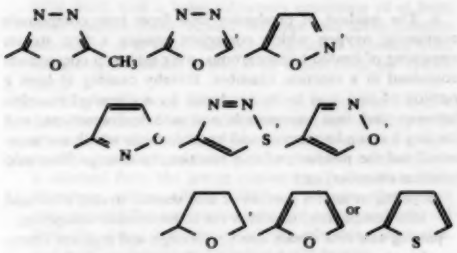
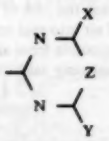


L-7

R_5 is C_1–C_4 alkyl, C_1–C_4 alkoxy, $OCH_2CH_2OCH_3$, F, Cl, Br, NO_2, CF_3, CO_2R_{19}, $SO_2NR_{20}R_{21}$, $SO_2N(OCH_3)CH_3$, OSO_2R_{22}, $S(O)_nR_{23}$, WCF_3, $WCHF_2$, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, C_1–C_2 alkyl substituted with OCH_3 or OCH_2CH_3, C_6H_5,

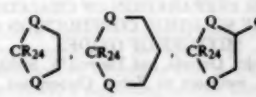


R_6 is H, F, Cl, Br, CF_3, CH_3, OCH_3, SCH_3 or OCF_2H;
R_7 is H, CH_3, OCH_3, F, Cl, Br. OSO_2CH_3 or $S(O)_nCH_3$;
R_{10} is Cl, NO_2, CO_2CH_3, $CO_2CH_2CH_3$, $SO_2N(CH_3)_2$, OSO_2CH_3, SO_2CH_3, $SO_2CH_2CH_3$, OCH_3 or OCH_2CH_3;
R_{19} is C_1–C_4 alkyl, $CH_2CH_2OCH_3$, CH_2CH_2Cl or $CH_2CH{=}CH_2$;
R_{20} is C_1–C_3 alkyl;
R_{21} is C_1–C_3 alkyl;
R_{22} is C_1–C_3 alkyl or $N(CH_3)_2$;
R_{23} is C_1–C_3 alkyl or $CH_2CH{=}CH_2$;
n is 0 or 2; and
W is O, S or SO_2;
A is



A-1

X is CH_3, OCH_3, OCH_2CH_3, Cl, F, Br, OCF_2H, CH_2F or CF_3;
Y is H, CH_3, OCH_3,OCH_2CH_3, CH_2OCH_3, $CH_2OCH_2CH_3$, $N(CH_3)_2$, CH_2CH_3, CF_3, SCH_3, $OCH_2CH{=}CH_2$, $OCH_2C{\equiv}CH$, OCH_2CF_3, $OCH_2CH_2OCH_3$, CH_2SCH_3, OCF_2H, SCF_2H, $CR_{24}(QCH_3)_2$,



or $CR_{24}(QCH_2CH_3)_2$;
Q is O or S;
R_{24} is H or CH_3;
Z is CH;
provided that
(1) the total number of carbon atoms of R_{20} and R_{21} is less than or equal to four; and
(2) when X is Cl, F, or Br, then Y is OCH_3, OCH_2CH_3, $N(CH_3)_2$ or OCF_2H.

11. A composition suitable for controlling the growth of undesired vegetation comprising an effective amount of a compound of claim 1 and at least one of the following: surfactant, solid or liquid inert diluent.

4,484,940

TETRAHYDROPHTHALIMIDES, AND THEIR PRODUCTION AND USE AS HERBICIDES

Eiki Nagano, Nishinomiya; Shunichi Hashimoto, Osaka; Ryo Yoshida, Kawanishi; Hiroshi Matsumoto, and Katsuzo Kamoshita, both of Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

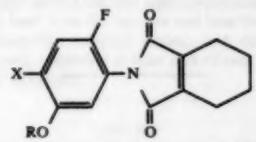
Filed Mar. 23, 1982, Ser. No. 360,997

Claims priority, application Japan, Sep. 1, 1981, 56-138044; Oct. 28, 1981, 56-173364; Nov. 9, 1981, 56-180046; Nov. 9, 1981, 56-180047; Nov. 10, 1981, 56-180547; Nov. 12, 1981, 56-182024; Nov. 12, 1981, 56-182025; Feb. 2, 1982, 57-15899

Int. Cl.[3] **C07D** *209/48;* **A01N** *43/88*

U.S. Cl. 71—96 **5 Claims**

1. A compound of the formula:



wherein X is a chlorine atom or a bromine atom and R is a C_1–C_8 alkyl group except isopropyl.

4,484,941

TETRAHYDROPHTHALIMIDES, AND THEIR PRODUCTION AND USE AS HERBICIDES

Eiki Nagano, Nishinomiya; Shunichi Hashimoto, Osaka; Ryo Yoshida, Kawanishi; Hiroshi Matsumoto, and Katsuzo Kamoshita, both of Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

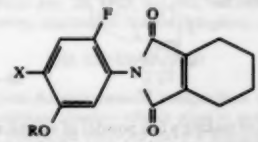
Filed Mar. 23, 1982, Ser. No. 360,999

Claims priority, application Japan, Sep. 1, 1981, 56-138044; Nov. 9, 1981, 56-180046; Nov. 9, 1981, 56-180047; Nov. 10, 1981, 56-180547; Nov. 12, 1981, 56-182024; Nov. 12, 1981, 56-182025; Feb. 2, 1982, 57-15899

Int. Cl.[3] **C07D** *209/48;* **A01W** *43/88*

U.S. Cl. 71—96 **8 Claims**

1. A compound of the formula:



wherein X is a chlorine atom or a bromine atom and R is a C_3–C_4 alkenyl group, a C_3–C_4 alkynyl group or a hydrogen atom.

4,484,942

N-BENZYLPHENYLACETAMIDE DERIVATIVES, AND THEIR PRODUCTION AND USE AS HERBICIDES

Osamu Kirino, Hyogo; Shunichi Hashimoto, Osaka; Hiroshi Matsumoto, Osaka, and Hiromichi Oshio, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

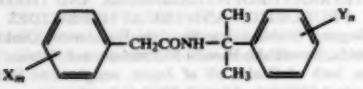
Continuation of Ser. No. 226,863, Jan. 21, 1981, abandoned. This application Aug. 2, 1983, Ser. No. 518,771

Claims priority, application Japan, Jan. 28, 1980, 55-9199

Int. Cl.³ A01N 9/20; C07C 103/76

U.S. Cl. 71—118 13 Claims

1. A compound of the formula:



wherein X and Y, which may be same or different, are each a C_1–C_3 alkyl group, a halogen atom, a trifluoromethyl group, a nitro group or a C_1–C_3 alkoxy group, m is an integer of 0 to 3 and n is an integer of 1 or 2.

10. A method for controlling a weed which comprises applying a herbicidally effective amount of the compound according to claim 1 to the weed.

4,484,943

METHOD AND APPARATUS FOR MAKING A FINE POWDER COMPOUND OF A METAL AND ANOTHER ELEMENT

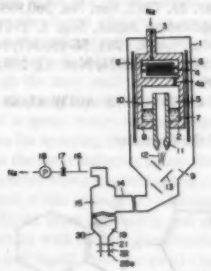
Hirohisa Miura; Hiroshi Satou; Toshio Natsume, and Hidenori Katagiri, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 1, 1983, Ser. No. 471,003

Claims priority, application Japan, Mar. 1, 1982, 57-32120; Mar. 9, 1982, 57-37027; Mar. 9, 1982, 57-37028

Int. Cl.³ B22F 9/00

U.S. Cl. 75—0.5 B 34 Claims



1. A method of making a fine powder of a metal and a second element in an intimate mutual relation, which comprises: passing a gaseous mixture of said metal and said second element through a convergent-divergent nozzle; and rapidly cooling said gaseous mixture by adiabatic expansion.

4,484,944

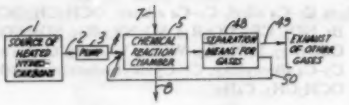
REDUCTION OF IRON ORES BY HYDROCARBONS

Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec, Canada H3H 1T1, and Sidney T. Fisher, 53 Morrison Ave., Montreal, Quebec, Canada (H3R 1K3)

Filed Oct. 27, 1983, Ser. No. 545,849

Int. Cl.³ C21B 13/08

U.S. Cl. 75—1 R 14 Claims



1. The method of producing iron from iron compounds containing oxygen which comprises passing a first stream consisting of heated hydrocarbons, over said iron compounds contained in a reaction chamber, thereby causing at least a portion of said iron to be produced by a chemical reaction between said iron compounds and said hydrocarbons, and causing a second stream of said hydrocarbons which are unreacted and the products of said reaction, to emerge from said reaction chamber, and

recycling at least a portion of said second stream over said iron compounds; in which the improvement comprises:

passing said first stream quickly through said reaction chamber, in order to minimize the recombination of oxygen atoms in said products of said reaction with said iron, and

passing said second stream through separation means which separates said uncombined hydrocarbons from other gases in said second stream, and

delivering only said uncombined hydrocarbons from said separation means to said reaction chamber for recycling, and

delivering said other gases from said separation means to an exhaust duct, so that in said reaction chamber said other gases are not present for a material length of time, do not materially dilute said hydrocarbons, and do not materially combine with said iron, and

maintaining pressure of said hydrocarbons and said other gases in said reaction chamber above atmospheric pressure, in order to increase the rate of said reaction and to reduce the entrance of air into said reaction chamber, and

separating said iron compounds from silica mixed with said iron compounds, so that only said iron compounds enter said reaction chamber.

4,484,945

PROCESS FOR PREPARATION OF CHALCOGENIDE ALLOYS BY SOLUTION COREDUCTION OF A MIXTURE OF OXIDES

Santokh S. Badesha, Ontario, and Thomas W. Smith, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 12, 1984, Ser. No. 588,604

Int. Cl.³ C01B 19/00

U.S. Cl. 75—0.5 A 14 Claims

1. A process for the preparation of chalcogenide alloys in high purity which comprises providing a solution mixture of oxides of the desired chalcogens, and subsequently subjecting this mixture to a simultaneous coreduction reaction.

4,484,946

METHOD OF PRODUCING IRON-, NICKLE-, OR COBALT-BASE ALLOY WITH LOW CONTENTS OF OXYGEN, SULPHUR, AND NITROGEN

Tohei Ototani, Tokyo, Japan, assignor to Metal Research Corporation, Tokyo, Japan

Filed Jun. 2, 1982, Ser. No. 384,293
Claims priority, application Japan, Jun. 2, 1981, 56-83780
Int. Cl.³ C21C 7/02
U.S. Cl. 75—58 11 Claims

1. A method of producing an iron-, nickel-, and cobalt-base alloy having an oxygen content of less than 0.003%, a sulphur content of less than 0.010%, and a nitrogen content of less than 0.010%, comprising the steps of:

(a) melting an alloy in a container selected from the group consisting of a lime crucible, a lime crucible furnace and a ladle lined with a basic refractory consisting of at least 40% calcium oxide (CaO), wherein said alloy consists essentially of at least one major ingredient selected from the group consisting of iron (Fe), nickel (Ni), and cobalt (Co);

(b) adding at least one additive and not more than 5% of a flux, based on the molten alloy, into said molten alloy in an atmosphere selected from the group consisting of a non-oxidizing atmosphere and a vacuum, wherein said additive is selected from the group consisting of aluminum (Al), aluminum alloys, silicon (Si), and silicon alloys, and wherein said flux contains at least one compound selected from the group consisting of oxides, silicates, carbonates, and halides of alkali and alkaline earth metals;

(c) desulphurizing, deoxidizing and denitrifying said molten alloy under an atmosphere selected from the group consisting of a non-oxidizing atmosphere and a vacuum, whereby the molten alloy contains a 0.005 to 7.0% of residual aluminum, 0.005 to 7.0% of residual silicon, and 0.0005 to 0.005% of residual calcium; and

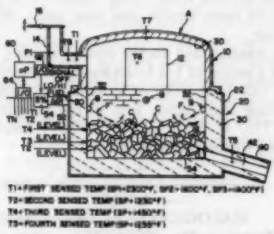
(d) casting said molten alloy into a mold.

4,484,947

METHOD FOR MELTING A CHARGE OF BULK SOLID METAL

Robert W. Marshall, DuBois, Pa., assignor to North American Manufacturing Company, Cleveland, Ohio

Filed Apr. 22, 1983, Ser. No. 487,463
Int. Cl.³ C22B 21/00
U.S. Cl. 75—65 R 50 Claims



1. A method of melting a charge of bulk solid metal with a known melting temperature and held in an enclosed hearth having a metal holding receptacle with an effective bath surface area, a crown, a supporting bottom and a peripherally extending wall surrounding said bath area, said crown and said wall being formed by a mass of refractory-like material with a high thermal retentivity, a flue for passage of gases from said hearth, and a plurality of fluid fired burners spaced in said area, each of said burners being selectively operative in either a high fire mode with a high velocity flame projecting toward said metal in said bath area of said receptacle and a low fire mode, the heating capacity of said burners being substantially different between said high fire mode and said low fire mode, said method comprising the steps of:

(a) during a first maximum, free fire heating cycle, operating said burners in said high fire mode with the flames from said burners generally impinging upon said metal charge in said receptacle;

(b) sensing a first temperature at a first location associated with said hearth, said first location being away from said metal and shielded from radiation by said flames

(c) after said first temperature reaches a first value substantially above said melting temperature of said metal, shifting said burners to a first controlled fire heating cycle by controlling the average heating capacity to maintain said first temperature at a second value near said first value;

(d) after a preselected time necessary for said metal in said receptacle to be at least generally melted, sensing a second temperature at a second location associated with said hearth, said second location being in said molten metal and adjacent said bottom;

(e) after said sensed second temperature reaches a set value only slightly above said melting temperature, shifting said burners to a second controlled fire heating cycle by controlling the average heating capacity to maintain said first temperature at a third value substantially below said second value and somewhat above said melting temperature whereby heat energy stored in said mass of refractory-like material is conducted to said metal to thermally equalize said molten metal in said bath; and,

(f) after at least partial thermal equalization among the molten metal, heat from the burners and heat from said mass of refractory-like material during said controlled fire heating cycle, removing at least part of said molten metal from said receptacle.

4,484,948

NATURAL WAX-CONTAINING INK JET INKS

Alfred R. Merritt; Theodore M. Cooke, both of Danbury; An-Chung R. Lin, New Town, and Richard G. Whitfield, Brookfield, all of Conn., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 331,604, Dec. 17, 1981, Pat. No. 4,390,369. This application Jun. 27, 1983, Ser. No. 507,918
The portion of the term of this patent subsequent to Jun. 28, 2000, has been disclaimed.
Int. Cl.³ C09D 11/12
U.S. Cl. 106—31 10 Claims

1. A hot melt ink jet ink composition for use in an impulse ink jet apparatus comprising at least one natural wax selected from the group of waxes consisting of Japan wax, candelilla wax, carnauba wax and mixtures thereof, said wax-containing composition having a maximum viscosity of about 35 centipoise when discharged from said impulse ink jet apparatus at elevated temperatures of between about 51° and 82° C.

4,484,949

CEMENT COMPOSITIONS

William D. Potter, Bishops Stortford; Andrew C. Barclay, Harlow; Reginald Dunning, Parbold, near Wigan, and Richard J. Parry, Southport, all of England, assignors to Smith & Nephew Research Limited, England

Filed Jun. 28, 1982, Ser. No. 392,667
Claims priority, application United Kingdom, Jul. 3, 1981, 8120581
Int. Cl.³ C04B 25/00
U.S. Cl. 106—85 20 Claims

1. A water-hardenable cement composition comprising a fluorine-free calcium alumino silicate glass in particulate form in which the individual particles have a particle size of less than 100 microns, which consists essentially of 25 to 35% silica, 27 to 35% calcium oxide, 25 to 40% alumina, an alkali metal oxide in an amount not more than 4% selected from lithium, oxide, sodium oxide and potassium oxide and titanium

oxide in an amount not more than 5%, wherein the total amount of lithium, sodium, potassium and titanium oxides is 0.5 to 9% and wherein the ratio of calcium oxide to silica is 0.7:1 to 1:0.7; together with a polycarboxylic acid.

4,484,950

COMPOSITES OF SULFUR AND CRYSTALLINE PHOSPHATE FIBERS

John A. Hinkebein, Manchester, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed May 4, 1983, Ser. No. 491,611

Int. Cl.³ C09K *3/00*

U.S. Cl. 106—287.29 **10 Claims**

1. A composite comprising elemental sulfur and a reinforceing amount of a phosphte fiber selected from the group consisting of acicular crystalline calcium metaphosphate and asbestiform crystalline calcium sodium phosphate or calcium lithium phosphate.

4,484,951

ALUMINUM FLAKE PIGMENT COMPOSITION FOR PAINT

Eikichi Uchimura, Yamatokoriyama, and Yoshiki Hashizume, Kashiwara, both of Japan, assignors to Toyo Aluminum Kabushiki Kaisha, Minami-Kyutaromachi, Japan

Continuation-in-part of Ser. No. 297,617, Aug. 31, 1981, abandoned, which is a continuation-in-part of Ser. No. 110,229, Jan. 7, 1980, abandoned. This application Sep. 6, 1983, Ser. No. 529,678

Claims priority, application Japan, Jan. 23, 1979, 54-6758; Jan. 23, 1979, 54-6759

Int. Cl.³ C09C *1/64, 3/04*

U.S. Cl. 106—290 **7 Claims**

1. An aluminum flake pigment composition for paint, consisting essentially of 100 parts by weight of aluminum flake particles, 1 to 7 parts by weight of dimer acid as an agent for enhancing the colour purity, metallic luster and anticorrosion property of the paint containing the same aluminum flake pigment composition, and 0.5 to 14 parts by weight of an aliphatic amine as an agent for preventing the agglomeration of aluminum flake particles in the same composition.

4. An aluminum flake pigment composition for paint of water dispersible type, consisting essentially of 100 parts by weight of aluminum flake particles, 1 to 7 parts by weight of dimer acid as an agent for enhancing the colour purity, metallic luster and anticorrosion property of the paint containing the same aluminum flake pigment composition, 0.5 to 14 parts by weight of aliphatic amine as an agent for preventing the agglomeration of aluminum flake particles in the same composition, and 3 to 17 parts by weight of surface active agent for rendering the same composition water dispersible.

4,484,952

PARTICULATE COLORING COMPOSITION MADE BY PRILLING

Richard F. T. Bes, AM Apeldoorn; Jan D. Knol, HJ Epeldoorn, and Gooitsen Roest, LL Apeldoorn, all of Netherlands, assignors to Holland Colours Apeldoorn B.V., Netherlands

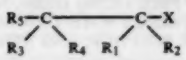
Continuation of Ser. No. 226,599, Jan. 21, 1981, abandoned. This application Aug. 3, 1983, Ser. No. 520,251

Claims priority, application Netherlands, Jan. 24, 1980, 8000464

Int. Cl.³ C09C *1/00*

U.S. Cl. 106—308 Q **13 Claims**

1. Coloring compositions for coloring articles, obtained by the process of mixing in the absence of water and organic solvent particles of at least one coloring pigment with a molten carrier solid at ambient temperatures and having a melting point of below 150° C., wherein the carrier consists essentially of hydrogenated castor oil or an organic compound of the general formula



in which

(a) if X is a free or esterified hydroxyl group, R_1, R_2 are hydrogen and R_3, R_4 and R_5 represent a free or esterified hydroxymethyl group;

(b) if X is a NH_2 group, R_1 and R_2 represent a=O group, R_3 and R_4 hydrogen and R_5 is a saturated alkyl group;

wherein the pigmentation ratio of the coloring composition is between 15 and 95%, and wherein said mixture is thereafter prilled.

4,484,953

METHOD OF MAKING DUCTILE CAST IRON WITH IMPROVED STRENGTH

Bela V. Kovacs; Roman M. Nowicki, both of Bloomfield Hills, and Charles A. Stickels, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US83/00114, § 371 Date Jan. 24, 1983, § 102(e) Date Jan. 24, 1983, PCT Pub. No. WO84/02925, PCT Pub. Date Aug. 2, 1984

PCT Filed Jan. 24, 1983, Ser. No. 474,655

Int. Cl.³ C21D *5/00; C22C 37/10*

U.S. Cl. 148—3 **9 Claims**

6. A ferritic-bainitic ductile cast iron composition, consisting essentially by weight of 3.0–3.6% carbon, 3.5–5.0% silicon, 0.7–5.0% nickel, 0–0.3% molybdenum, 0.2–0.4% manganese, less than 0.06% phosphorus, less than 0.015% sulphur, 0.02–0.06% magnesium, and the remainder essentially iron, said composition being particularly characterized by a microstructure having a matrix with 70–85% bainite, 15–30% acicular ferrite, and 0–2% massive austenite, the graphite nodules being dispersed throughout the matrix.

9. A method of making a ductile cast iron having a microstructure with a matrix consisting essentially of ferrite and bainite, said cast iron exhibiting a tensile strength of at least 140 ksi, a yield strength of at least 80 ksi, and an elongation of 6–10%, the method comprising:

(a) melting a ferrous alloy comprising by weight 3.0–3.6% carbon, 3.5–5.0% silicon, 0.2–0.4% manganese, and the remainder essentially iron except for the presence of selected bainite formers and low phosphorus and sulfur, the melted ferrous alloy being subjected to a nodularizing agent to form ductile cast iron upon solidification and cooling;

(b) heat treating said ductile iron by heating to 1575°–1650° F. for a period of 1–3 hours and immediately quenching to 675°–750° F. at a rate of at least 275° F./min; and

(c) holding said ductile iron in the temperature range of 400°–775° F. for a period of 0.5–4 hours followed by cooling to room temperature.

4,484,954

HALOGENATION TREATMENT

Gregorio Tarancon, Woodbridge, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Aug. 3, 1982, Ser. No. 404,814

Int. Cl.³ C23C *11/00*

U.S. Cl. 148—6.3 **4 Claims**

1. A batch process for the halogenation of solid polymeric or metallic material comprising the following steps:

(a) providing a closed system comprising a chamber containing air at about atmospheric pressure and having inlet and outlet means, a heat exchanger, and a circulation pump, all connected in series;

(b) introducing the material into the chamber;

(c) heating the chamber and the material to a selected temperature in the range of about 100° F. to about 200° F. by recirculating the air through the heat exchanger;

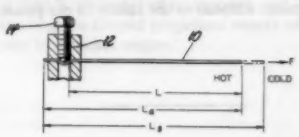
(d) evacuating the system to a pressure of less than about 1 psia;
(e) introducing a halogen into the system in an amount (i) of up to about 10 percent in excess of the theoretical amount of halogen required to halogenate the material to a desired depth and (ii) sufficient to provide a partial pressure in the system in the range of about 0.1 psia to about 3 psia;
(f) introducing an inert gas into the system in an amount sufficient to provide a total pressure in the system of about one atmosphere;
(g) maintaining the selected temperature by recirculating the halogen/inert gas mixture through the heat exchanger;
(h) recirculating the halogen/inert gas mixture a sufficient number of times to reduce the amount of halogen to less than about 5 percent of the amount of halogen initially introduced into the system;
(i) evacuating the system to a pressure of less than about 1 psia;
(j) introducing air into the system to provide about atmospheric pressure; and
(k) removing the material.

4,484,955

SHAPE MEMORY MATERIAL AND METHOD OF TREATING SAME

Peter A. Hochstein, 2966 River Valley Dr., Troy, Mich. 48098

Filed Dec. 12, 1983, Ser. No. 560,321
Int. Cl.³ C21D *1/78*; C22F *1/08, 1/10*
U.S. Cl. 148—11.5 R **10 Claims**



1. A method of treating an integral piece of temperature-sensitive material to undergo thermoelastic, martensitic phase transformation in response to heat to pass from a martensitic phase when at a temperature below a phase transformation temperature range and capable of a first high level of recoverable strain to a parent austenitic phase and a memory shape when at a temperature above the phase transformation temperature range and capable of a second lower level of recoverable strain, said method characterized by cold working the integral piece of material to a cold worked state comprising a disordered combination of martensitic and austenitic structure, and memory annealing a first portion of the integral piece of material to establish the martensitic and austenitic phases and the memory shape in the austenitic phase while retaining a second portion of the integral piece of material in the cold worked state and incapable of shape memory response.

4,484,956

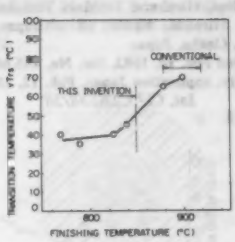
PROCESS FOR PRODUCING HEAT-RESISTANT FERRITIC STAINLESS STEEL SHEET

Yoshiaki Shida, Ikoma; Hisao Fujikawa; Masao Koike, both of Nishinomiya; Junichiro Murayama, Takarazuka, and Shunichiro Akiyama, Joetsu, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka and Nippon Stainless Steel Co., Ltd., Tokyo, both of, Japan

Filed Feb. 22, 1984, Ser. No. 582,534
Claims priority, application Japan, Feb. 23, 1983, 58-27725
Int. Cl.³ C21D *7/14*
U.S. Cl. 148—12 EA **10 Claims**

1. A process for producing heat-resistant ferritic stainless steel sheet which exhibits improved toughness and productivity, which comprises the steps of:

hot rolling a steel with a finishing temperature of not higher than 850° C. said steel comprising, by weight %,
C: not more than 0.07%,
Si: 1.5–3.5%,
Mn: not more than 2.0%,
Cr: 10–25%,
N: not more than 0.05%,



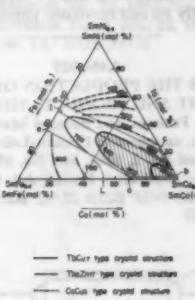
Nb: 5X(C%+N%)-20X(C%+N%),
optionally at least one element selected from the group consisting of Al, Y, Ca, and REM in a total amount of 0.3% or less, and
the balance iron and incidental impurities; and
annealing the resulting hot-rolled steel sheet at a temperature of 820°–1000° C.

4,484,957

PERMANENT MAGNETIC ALLOY

Akira Higuchi, Osaka; Naoyuki Ishigaki, Shiga; Yutaka Matsuura, and Hitoshi Yamamoto, both of Osaka, all of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 231,316, Feb. 4, 1981, abandoned. This application Aug. 25, 1982, Ser. No. 411,276
Claims priority, application Japan, Feb. 7, 1980, 55-14453
Int. Cl.³ H01F *1/04*
U.S. Cl. 148—31.57 **19 Claims**



1. A permanent magnetic article having a maximum energy product of 20 MGOe or higher and produced by aging a sintered permanent magnetic body at a temperature of 750°–850° C., the sintered permanent magnetic body consisting essentially of an intermetallic compound shown by the formula:

$$R(Ni_xFe_yCo_{1-x-y-z}Cu_z)_A$$

wherein R is at least one element selected from the group consisting of Y, La, Ce, Pr, Nd and Sm, and
$0.02 \leqq x \leqq 0.55$
$x/y = 0.07–25.0$
$0.01 \leqq y \leqq 0.65$
$0.02 \leqq z \leqq 0.30$
$x+y+z<1$

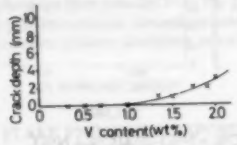
$6.0 < A < 8.0$
and having a crystal structure substantially of the $TbCu_7$ type with a Curie point of no less than 800° C.

4,484,958

NON-MAGNETIC ALLOY HAVING HIGH HARDNESS AND GOOD WELDABILITY

Atsunobu Shintani, Hirakata; Yoshiki Yamakami, Toyonaka, and Hisashi Hiraishi, Kyoto, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Feb. 10, 1983, Ser. No. 465,661
Claims priority, application Japan, Feb. 12, 1982, 57-21812
Int. Cl.³ C22C *38/58*
U.S. Cl. 148—38 **3 Claims**



1. An electromagnetic stirrer roll adapted for use in continuous casting, said roll being formed of an alloy having high hardness, low magnetic permeability and good weldability, and consisting essentially of the following components in the following proportions in terms of % by weight:

C	0.1–0.6%
$0 < Si \leq 2.0\%$	
Mn	5.0–15.0%
Cr	5.0–15.0%
Ni	5.0–13.0%
$0 < V < 1.0\%$, and	

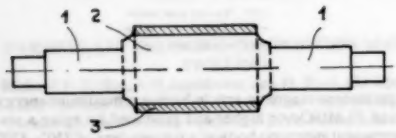
one or both of $0 < Mo \leq 1.0\%$ and $0 < Nb \leq 2.0\%$, the balance being substantially Fe and inevitable impurities.

4,484,959

PROCESS FOR THE PRODUCTION OF A COMPOSITE METAL PART AND PRODUCTS THUS OBTAINED

André Boucher, Fraisses, and Bernard Marand, Saint-Etienne, both of France, assignors to Creusot-Loire, Paris, France

Filed Jul. 2, 1982, Ser. No. 394,984
Claims priority, application France, Jul. 17, 1981, 81 13939
Int. Cl.³ C21D *9/38*; B21B *27/02*; B23K *9/04, 26/00*
U.S. Cl. 148—127 **15 Claims**



1. A process for producing a composite cold rolling roll or roller by coating or hard-surfacing a metal core of low-alloy structural steel with a harder metal layer composed of a high-speed steel containing chromium in a concentration from about 2% to about 14%, and at least one metal selected from the group consisting of tungsten in a concentration from about 10% to about 20%, molybdenum in a concentration from about 3% to about 12%, and cobalt in a concentration from about 2.5% to about 16%, wherein this high-speed steel is so selected as to exhibit a hardness higher than 57 Rockwell C and contains the following elements in a concentration range as follows:

C=0.5% to 2.6%
Mn=0.2% to 1.7%
Si=0.2% to 1.4%
S=at most 0.2%
V=at most 10%
with Mo%+W%+V%+Co% at least equal to 3, wherein the low-alloy structural steel forming the metal core is so selected as to ensure a non-fragile connection to the high-speed steel and to be compatible with the utilisation stresses of the part, and has a composition within the range defined below:

C	= 0.2% to 1%	Ni	= 0% to 2.5%
Mn	= 0.2% to 1.5%	Cr	= 0.5% to 6%
Si	= 0.2% to 1%	Mo	= 0% to 2%
S	= 0.005% to 0.200%	V	= 0% to 0.5%,

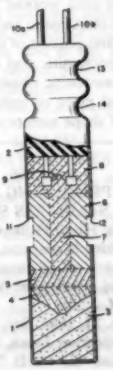
wherein the said high-speed steel is added solely in the form of a prealloyed powder, and the coating of hard-surfacing of the core with this powder is effected by welding the high-speed steel to the metal core by means of one of the welding processes of the following group: welding by means of a transferred or semi-transferred arc plasma torch, or welding by means of a laser torch, the operation of coating or hard-surfacing by welding being followed by tempering heat treatment, or by hardening and tempering heat treatment adapted to the nature of the powder used.

4,484,960

HIGH-TEMPERATURE-STABLE IGNITION POWDER

Klaus G. Rucker, Kinnelon, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 469,954, Feb. 25, 1983,. This application Nov. 15, 1983, Ser. No. 551,942
Int. Cl.³ C06B *43/00, 47/10*
U.S. Cl. 149—22 **5 Claims**



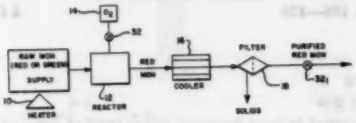
1. An ignition powder for electrically actuated initiation devices comprising a mixture of boron and ferric oxide in about a 6/94 to 40/60 parts ratio by weight.

4,484,961

PREPARATION AND PURIFICATION OF N_2O_4 CONTAINING ROCKET PROPELLANT OXIDIZER

Henry P. Heubusch, Buffalo, N.Y., assignor to Textron, Inc., Providence, R.I.

Filed Oct. 26, 1981, Ser. No. 314,701
Int. Cl.³ C06B 47/04
U.S. Cl. 149—74 14 Claims



1. In the process of supplying liquid nitrogen tetroxide propellant to a rocket engine, the steps of:

(a) providing a supply of liquid nitrogen tetroxide propellant which is contaminated by iron salts which are increasingly soluble in the propellant both as temperature and the concentration of NO increase and which propellant consists essentially of a mixture of NO_2 and N_2O_4 in equilibrium and including dissolved O_2 so that the mixture is free of NO;

(b) adjusting and maintaining the temperature of the propellant supply of step (a) to a temperature in the range 20° to 35° F. to precipitate dissoived iron salts therefrom and filtering the propellant supply while at said temperature to remove particles including precipitated iron salts at least larger than in the order of six microns; and

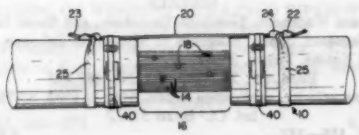
(c) recovering the filtered propellant supply of step (b) for delivery to a rocket engine.

4,484,962

METHOD AND APPARATUS FOR APPLYING STRAIN RELIEF TO A CABLE SPLICE

Zoltan B. Dienes, Annandale, and Thomas L. Mineur, High Bridge, both of N.J., assignors to Thomas & Betts Corporation, Raritan, N.J.

Filed Jan. 17, 1984, Ser. No. 571,400
Int. Cl.³ H01B 13/00; H01R 13/58
U.S. Cl. 156—49 15 Claims



1. A method of strain relieving a splice area of a cable having a plurality of conductors surrounded by an outer insulated jacket, the method comprising the steps of:

placing a length of flexible cord across the cable splice;

securing each end of said flexible cord to said cable jacket, at a position adjacent from said cable splice;

placing a frictional substrate on said cable jacket, over said flexible cord adjacent each end of said cable splice; and

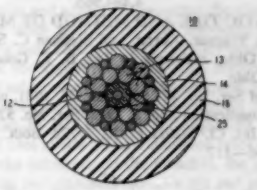
applying compressive fastening means to said cable, over said frictional substrate on each side of said splice.

4,484,963

METHOD FOR FABRICATING AN OPTICAL FIBER CABLE

Stephen N. Anetil, Rochester, N.H.; Robert F. Gleason, Freehold, N.J.; Don A. Hadfield, North Hampton; John S. B. Logan, Jr., Dover, both of N.H., and Alfred G. Richardson, Aberdeen, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 24, 1983, Ser. No. 469,429
Int. Cl.³ H01B 13/26
U.S. Cl. 156—56 9 Claims



9. A method for fabricating an optical fiber cable comprises the steps of

coating, with a hot melt adhesive, a cable core including optical fibers, the adhesive being applied to the cable core at a temperature in a range of 220°–240° Centigrade;

winding at least one layer of steel wires over the adhesive on the core;

forming a conducting tube over the layer of wires; and

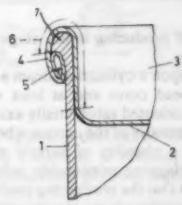
swaging the tube down onto the layers of wires.

4,484,964

METHOD OF PROVIDING A SEAL BETWEEN CAN END PLATE AND CAN BARREL

Kiyoshi Kawamata, 2-337 Takahana Cho, Ohmiya City Saitama Prefecture, Japan

Continuation-in-part of Ser. No. 335,273, Dec. 28, 1981, abandoned. This application Jul. 13, 1983, Ser. No. 513,275
Claims priority, application Japan, Jun. 22, 1981, 56-92113
Int. Cl.³ B32B 31/16
U.S. Cl. 156—69 13 Claims



1. A method of providing a seal between a can barrel and a can end plate comprising the steps of:

(1) providing a press-to-fit type lid comprising a metalic can end plate having a circumferential peripheral portion of inverted U-shaped cross section, defining an annular groove, the peripheral portion including a free outer side wall, the can end plate being coated at its inner side with a first layer of heat-fusible plastic;

(2) providing a can barrel coated at its inside surface with a second layer of heat-fusible plastic;

(3) fitting the can end plate to the upper end of the can barrel such that the upper edge portion of the can barrel wall is tightly fitted in the annular groove in the can end plate;

(4) curling the free outer side wall at least one turn into the

groove to form a curled portion protruding into the groove so that the groove has an upper portion and a lower portion narrower than the upper portion;

(5) pressing the curled portion against the upper edge portion of the can barrel so as to cause the upper edge portion of the can barrel to be compressed and expanded in the respective lower and upper portions of the groove; and

(6) applying heat to the juncture between the upper end of the can barrel and the can end plate, thereby to fuse the first layer of plastic and second layer of plastic to form a tight seal between the can barrel and the can end plate.

4,484,965

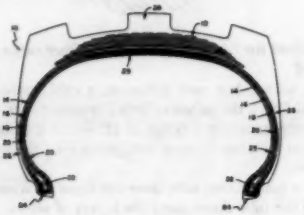
PNEUMATIC TIRE AND METHOD OF MAKING SAME

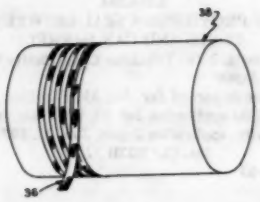
William D. Wagner, Akron, and Stephen C. Sabo, Barberton, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 277,566, Jun. 25, 1981, abandoned. This application Sep. 2, 1983, Ser. No. 529,172

Int. Cl.³ B29H *17/20, 17/26;* **B60C** *9/20*

U.S. Cl. 156—117 **5 Claims**





1. A method for producing in one stage a radial pneumatic tire comprising:

(a) assembling upon a cylindrical drum a tire carcass including spaced bead cores and at least one ply of rubber-coated cords oriented substantially axially upon the drum;

(b) applying externally of the carcass a belt wherein said belt is applied as a plurality of narrow strips of rubberized cords in overlapping relationship, wherein the strips are disposed such that the reinforcing cords of a portion of the number of the strips are at opposite acute angles relative to the circumferential centerline of the drum with respect to the reinforcing cords in the remainder of the strips; and wherein said strips have a width of from about 15 to about 30 percent of the width of the tire tread width as measured on the vulcanized tire and are applied with an overlap width of at least 50 percent of the strip width, and said strips each have parallel reinforcing cords running at a bias angle of from about 45 degrees to about 65 degrees relative to the circumferential centerline of the drum;

(c) applying rubber externally of said belt and carcass to constitute the tread and sidewall portions of the completed tire;

(d) removing the assembled materials as a cylindrical uncured tire from the building drum; and

(e) shaping the uncured tire to a toroidal configuration and vulcanizing the shaped tire with heat and pressure.

4,484,966

PROCESS OF AND APPARATUS FOR MANUFACTURING CARCASS BAND FORMING PART OF RADIAL TIRE

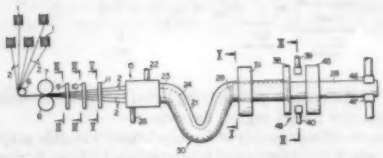
Hisao Kawamoto, Akigawa, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Nov. 2, 1982, Ser. No. 438,461

Claims priority, application Japan, Nov. 9, 1981, 56-179245

Int. Cl.³ B29H *17/02*

U.S. Cl. 156—126 **4 Claims**



1. A process of manufacturing carcass bands which are reinforced by cords and are employed in fabricating a radial tire, comprising of the steps of

unwinding a plurality of cords from a plurality of reels, respectively,

travelling said cords through apertures formed in guide members and entering a rubber coating mechanism,

coating said cords with rubber material by means of said rubber coating mechanism to produce incessantly a cylindrical tube having said cords embedded therein,

storing said cylindrical tube temporarily between its leading end portion and said rubber coating mechanism,

receiving said leading end portion of said cylindrical tube on an axially elongated retaining member having rear and front ends,

retaining said leading end portion of said cylindrical tube and moving said leading end portion retained by means of a first retaining mechanism to a position in which said cylindrical tube is severed,

severing said cylindrical tube into a predetermined length from the leading end thereof while producing incessantly said cylindrical tube and storing temporarily said tube between said rubber coating mechanism and said rear end of said axially elongated retaining member, and

taking out from said axially elongated retaining member the severed tube while producing incessantly said cylindrical tube and storing temporarily said tube between said rubber coating mechanism and said rear end of said axially elongated retaining member.

4,484,967

METHOD FOR BONDING DIFFERENT KINDS OF METALS

Yoshikazu Watanabe; Toshihide Tsukahara, and Shozo Ota, all of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1983, Ser. No. 489,413

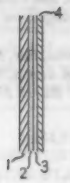
Claims priority, application Japan, May 7, 1982, 57-75091

Int. Cl.³ B32B *31/12*

U.S. Cl. 156—151 **6 Claims**

1. A method for bonding two dissimilar metals by means of an insulating material to avoid electrolytic corrosion between the metals when used in water or sea water, which method comprises applying a thermosetting paint containing glass flakes therein to one or both of the surfaces of a first and second metallic material to be bonded together to form an insulating paint film on the surface or surfaces of the two different metals; applying a binder onto the surface or surfaces of said insulating film and/or onto the surface of said metal surface in the case in which an insulating film is not formed, and bringing said first and second metals together in tight

contact with each other so that the insulating layer and binder are sandwiched inbetween the first and second metal materials



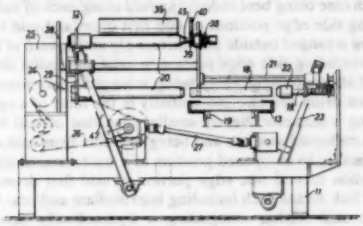
so as to form an electrically insulated bonded layer therebetween.

4,484,968

METHOD AND APPARATUS FOR COVERING FLEXIBLE SYMMETRICAL ANGULATE TUBES WITH SHEET MATERIAL

Bo T. Quist, Veberöd; Jan B. Jeppsson, Lomma, and Lars E. Piltz, Dalby, all of Sweden, assignors to AB Akerlund & Rausing, Sweden

Filed Dec. 7, 1981, Ser. No. 328,025
Claims priority, application Sweden, Dec. 15, 1980, 8008799
Int. Cl.³ B29C *17/04;* B32B *31/00;* B65C *9/06, 3/12*
U.S. Cl. 156—160 **10 Claims**



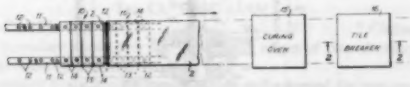
1. A method of covering with sheet material a tube having an angulate, essentially symmetrical and resiliently deformable cross-sectional shape, comprising the steps of temporarily deforming said angulate tube on a support means such that said tube assumes a substantially cylindrical cross-sectional shape, applying sheet material around substantially the entire circumference of said temporarily deformed tube for covering said tube with said sheet material, and permitting said tube to reassume its angulate cross-sectional shape.

4,484,969

METHOD OF WINDING TILE-LINED PIPED WITH SUBDIVIDED TILES THEREIN

Fred E. Klimpl, 20 Hampton Rd., Great Neck, N.Y. 11020, assignor to Koch Engineering Co., Inc., Wichita, Kans.

Filed Sep. 29, 1982, Ser. No. 428,176
Int. Cl.³ B65H *81/00*
U.S. Cl. 156—171 **6 Claims**



1. A method of producing a tile-lined pipe comprising adhering tiles in adjoining relation one after another on a longitudinal substrate of stretchable material, subdividing each of the tiles transversely in situ on said substrate to form a plurality of successive independent tile elements from each tile in which each tile element closely comforms to its adjacent tile element along adjoining division edges, and forming a pipe with said tile element lining the inner surface of the pipe, said pipe being formed by winding said substrate on a mandrel and forming said pipe on the wound mandrel in adhered relation with the tile elements and removing the mandrel after the tile elements and pipe are joined together, said pipe being moreover formed on said tile elements by winding fiberglass filaments on said tile elements and joining said filaments and the tile elements with a resin which is applied over and between the tile elements.

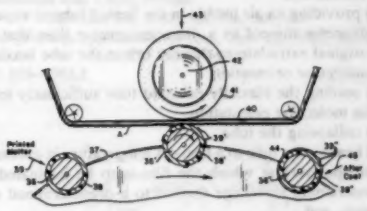
6. Apparatus for producing a tile-lined pipe comprising means for longitudinally advancing substrate, means for feeding plurality of tiles and adherently securing the tiles in adjoining relation one after another on said substrate, means for helically winding said substrate with the tiles thereon onto a mandrel, means for applying and binding filaments on the helically wound substrate to form a tile-lined pipe, the mandrel being removed from the pipe after the formation thereof, and means subsequent to said feeding and adhering means for subdividing said tiles in situ on said substrate prior to the helical winding of the substrate on the mandrel, the subdividing means comprising two opposed movable die and punch members having an open position for receiving the substrate with a tile thereon, and a closed position in which the die and punch members apply force to the tiles to subdivide the same transversely, said tiles being formed with score lines to facilitate their subdivision by said subdividing means.

4,484,970

METHOD OF APPLYING DECORATIVE FOIL TO MATERIALS

Henry A. Burzlaff, and George H. Holoubek, both of Muscatine, Iowa, assignors to Thatcher Plastic Packaging, Inc., Muscatine, Iowa

Filed Nov. 1, 1982, Ser. No. 438,316
Int. Cl.³ B44C *1/14, 3/00;* B32B *31/00*
U.S. Cl. 156—233 **11 Claims**



1. A method of applying decorative foil coated with an adhesive and ink to a material to produce an article having portions bearing ink and other portions bearing said decorative foil, comprising:

applying ink in a desired pattern to the material to form an inked material having an ink-bearing and an ink-free portion, said ink having therein, a releasing agent which prevents the adhesive coating on said decorative foil from adhering to the said ink;

curing said ink;

disposing said decorative foil with the adhesive coating adjacent to said inked material;

contacting both the ink-bearing and ink-free portions of said inked material with said adhesive coated decorative foil at a temperature and pressure which causes said adhesive to bond said decorative foil to said ink-free portion of said inked material but not to said ink-bearing portion; and

removing said decorative foil from contact with said ink-bearing portion of said inked material, whereby is created an article having portions bearing said decorative foil and having adjacent portions in perfect registration therewith

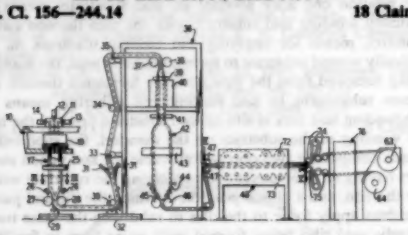
free of said decorative foil and bearing ink in said desired pattern.

4,484,971

METHOD AND APPARATUS FOR MAKING IMPROVED LAMINATING FILM

James C. Wang, Libertyville, Ill., assignor to General Binding Corporation, Northbrook, Ill.

Division of Ser. No. 391,874, Jun. 24, 1982,. This application Sep. 7, 1983, Ser. No. 529,998
Int. Cl.³ B29D *23/04*; B32B *31/30*
U.S. Cl. 156—244.14 18 Claims



1. The method of manufacturing a film suitable for use in lamination under heat and pressure which comprises:

(1) co-extruding concentric annuli of a polyester as the inner annulus and a polyolefin based resin as the outer annulus while rotating said annuli about their common axis during extrusion,

(2) quenching the extrudate to form a multi-layer seamless tube,

(3) heating the tube to a temperature suitable for biaxial orientation,

(4) providing an air bubble in the heated tube to expand the diameter thereof to a diameter greater than that of the original extrudate to thereby orient the tube biaxially by molecular orientation,

(5) cooling the biaxially oriented tube sufficiently to retain its molecular orientation,

(6) collapsing the tube,

(7) heating the tube to a heat-set temperature in excess of the temperature at which the film is to be laminated while restraining shrinkage thereof to a predetermined dimension, and

(8) slitting the edges of the tube to form a pair of flat films which retain some transverse shrinkage properties.

4,484,972

METHOD FOR ADHESION OF SILICON NITRIDE PARTS

Yoshihiro Ebata, Kawanishi; Nobuyuki Tamari; Makoto Kinoshita, both of Ikeda, and Yasuo Teibana, Osaka, all of Japan, assignors to Agency of Industrial Science & Technology Ministry of International Trade & Industry, Tokyo, Japan

Filed Aug. 12, 1982, Ser. No. 407,352
Claims priority, application Japan, Aug. 21, 1981, 56-131683
Int. Cl.³ C09J *1/00*
U.S. Cl. 156—325 8 Claims

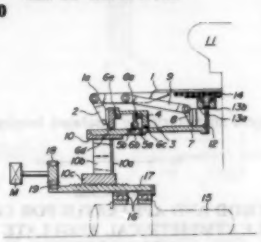
1. A method for the adhesion of two silicon nitride parts, said method comprising interposing a mixture of 99% to 50% by weight of calcium fluoride and 1% to 50% by weight of kaolin between the two silicon nitride parts and heating the mixture to a temperature not lower than the decomposition point of calcium fluoride.

4,484,973

PLY-TURNING DEVICE FOR USE IN TIRE-BUILDING

Shinji Kawaida, Shimonoseki, and Chiaki Ozawa, Kodaira, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 9, 1983, Ser. No. 560,005
Claims priority, application Japan, Dec. 22, 1982, 57-225473
Int. Cl.³ B29H *17/22*
U.S. Cl. 156—400 3 Claims



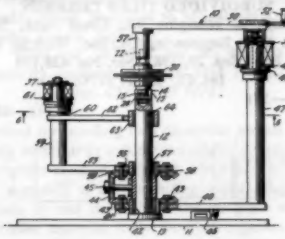
1. A ply-turning device for use in tire-building comprising a plurality of ply-turning vanes for turning upward a surplus portion of a ply for carcass around each of bead cores, said surplus portion of the carcass ply placed on an outer circumferential surface of a first cylindrical drum for the formation of a first green case being bent radially inward along each of axially protruding side edge portions of said first drum and said bead core being arranged outside said carcass ply and inward of said axially protruding side edge portion in axial and radial direction; said all ply-turning vanes being arranged concentrically to said first drum and circumferentially in the form of a cylinder having a diameter slightly smaller than that of said bead core at a collapsed position and being movable from said collapsed position to an opened position of a frustoconical shape in opposition to said side edge portion of said first drum by means of link means each including intermediate and rear link members; and further comprising a hydraulically driving means whose movable member is connected to an end of said rear link member and moved toward and away from said first drum in parallel with an axis of said first drum, and a retractably moving means for moving said all ply-turning vanes together with said link means in parallel with the axis of said first drum.

4,484,974

MULTIPLE LAYER COIL WINDING SYSTEM

Irwin L. Rothman, Goshen, N.Y., assignor to Loral Corporation, Yonkers, N.Y.

Filed Jun. 27, 1983, Ser. No. 507,987
Int. Cl.³ H01F *41/06*
U.S. Cl. 156—425 3 Claims



1. A coil winding means for use in winding a pair of electrical coils interconnected at the inner peripheries thereof comprising: a shaft; a pair of compression plates carried by said

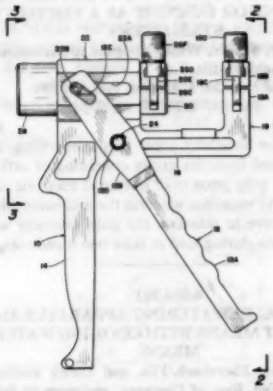
shaft and defining an annular space therebetween for winding said coil; a planar divider having a radially extending slot selectively positioned on said shaft in said annular space, and means for simultaneously winding a wire coil segment on each side of said divider interconnected at said slot, an equal number of turns to provide a single coil with both free ends thereof on an outer periphery of said coil; said means including first and second sources of supply for each interconnected segment.

4,484,975

HAND HELD APPARATUS FOR JOINING SMALL DIAMETER PLASTIC PIPE

Arthur H. McElroy, Tulsa, Okla., assignor to McElroy Manufacturing, Inc., Tulsa, Okla.

Filed Jan. 23, 1984, Ser. No. 572,806
Int. Cl.³ B29C *27/12*; F16L *13/02, 47/02*
U.S. Cl. 156—503 **9 Claims**



1. A hand-held fusion device for joining two sections of small plastic pipe in coaxial, end-to-end relation, comprising:

(a) a first inverted L-shaped frame of selected dimensions, one portion, the vertical part, comprising a first handle, the horizontal portion comprising a pipe clamp frame;

(b) a stationary clamp at one end of said horizontal portion to hold one section of said pipe substantially parallel to said pipe clamp frame;

(c) a movable clamp means mounted on said horizontal portion at the other end, with its axis parallel to said pipe clamp frame and coaxial with said stationary clamp;

(d) a second handle part, pivoted to said L-shaped frame and adapted to control the axial position of said movable clamp relative to said stationary clamp.

4,484,976

SEALANT APPLICATOR FOR JOINING PLANAR MATERIALS

Maurice Despins, St. Albert, Canada, assignor to Omniart Distributions Inc., Edmonton, Canada

Filed Jun. 22, 1983, Ser. No. 506,601
Int. Cl.³ B65C *11/04*
U.S. Cl. 156—578 **7 Claims**

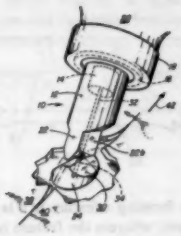
1. A sealant applicator for joining the edges of two abutting planar materials comprising:

a unitary body having means at one end adapted for engagement with a sealant container;

said body having a foot at its end remote from said container-engaging means;

said body having a leg portion between said container-engaging means and said foot, said leg being of smaller cross-section dimension than said foot and said foot having an upper surface extending laterally of said leg at an angle to the axis of the leg;

a conduit within said body communicating at one end with said container-engaging means and opening at its other end at least on the upper surface of said foot;



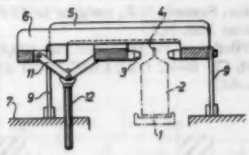
said body being positionable with the leg between the adjacent edges of one of said planar materials, the foot inserted beneath the under surface of at least one of said planar materials and sealant applied thereto on movement of said body along the abutting edges.

4,484,977

ARRANGEMENT FOR THE PROCESSING OF A PACKING CONTAINER

Roland J. E. Andersson, Malmö, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Jun. 10, 1983, Ser. No. 503,090
Claims priority, application Sweden, Jun. 21, 1982, 8203839
Int. Cl.³ B30B *15/34*
U.S. Cl. 156—583.1 **10 Claims**



1. An arrangement for processing a sealing fin on a packing container, comprising:

a machine frame;

two carrier elements movably secured to said frame with each of the carrier elements supported by four spring devices; said spring devices defining a parallelogram suspension for the carrier elements;

driving elements pivotably connected to said carrier elements for reciprocally moving each carrier element in an opposite direction relative to the other carrier element; and

a processing jaw supported by each carrier element on opposite sides of said sealing fin, said processing jaws being moved by said carrier elements between an active position wherein the processing jaws contact the sealing fin and an inactive position wherein the processing jaws are spaced from the sealing fin.

4,484,978

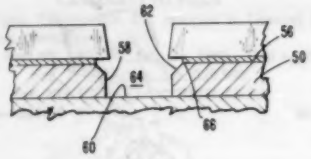
ETCHING METHOD

Thomas Keyser, Mountain View, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Sep. 23, 1983, Ser. No. 535,148

Int. Cl.³ B44C 1/22; C03C 15/00, 25/06; C23F 1/02

U.S. Cl. 156—643 **16 Claims**



1. A method for forming a feature in a layer of silicon oxide overlying a substrate, wherein the feature is defined, at least in part, by a wall of the silicon oxide layer extending substantially perpendicularly from a horizontal principal plane of the substrate to a beveled edge joining the wall to a principal surface of the silicon oxide layer, comprising the steps of:

providing a substrate with a layer of silicon oxide thereon;

forming an etching mask for the layer of silicon oxide including a first mask layer and a second mask layer overlying the first layer, wherein an opening is formed in the second mask layer for defining the feature in the silicon oxide layer, said opening having a peripheral edge, and wherein said first mask layer is etched to undercut the second mask layer in a region adjacent to the peripheral edge of the opening;

anisotropically etching silicon oxide exposed in the opening to form a generally vertical wall in the silicon oxide at the edge of the opening in the second mask layer; and

isotropically, chemically etching the silicon oxide to bevel the edge in the undercut region;

whereby, the beveled edge is formed in the silicon oxide layer.

4,484,979

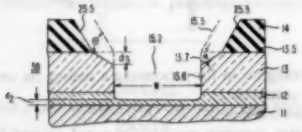
TWO-STEP ANISOTROPIC ETCHING PROCESS FOR PATTERNING A LAYER WITHOUT PENETRATING THROUGH AN UNDERLYING THINNER LAYER

Hans J. Stocker, Summit, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 16, 1984, Ser. No. 600,524

Int. Cl.³ B44C 1/22; C03C 15/00, 25/06

U.S. Cl. 156—643 **14 Claims**



1. A method for forming a pattern of apertures in a structure comprising a relatively thick first layer of a first material coating a relatively thin second layer of a second material, different from the first, which coats a major surface of a wafer body including the steps of:

(a) coating the first layer with a masking layer which has apertures, each having a given original width, in accordance with the pattern;

(b) subjecting the structure to a first anisotropic etching step for a first amount of time, whereby most but not all of the thickness of the first layer underlying at least some of the apertures in the masking layer is removed, and all of the thickness thereof underlying any other apertures in the masking layer is removed;

(c) subjecting the structure to a second anisotropic etching step for a second amount of time, the ratio of the etching removal rate of the second material in the second layer to that of the first layer being significantly smaller during the second etching step than during the first etching step, the etching rate during the second etching step of the masking layer being greater than that of the first layer but during the first step being less than that of the first layer, whereby all of the thickness of the first layer underlying all of the apertures in the masking layer is removed, but only a portion of the thickness of the second layer is anywhere removed, so that the underlying major surface of the wafer remains everywhere covered by at least a remaining thickness of the second layer.

4,484,980

PROCESS FOR BLEACHING PAPER PULP USING CAFFEINE OR GUANINE AS A VISCOSITY STABILIZERS

G. Graham Allan, Seattle, Wash., assignor to Melamine Chemicals, Inc., Donaldsonville, La.

Filed Sep. 30, 1983, Ser. No. 537,889

Int. Cl.³ D21C 9/12, 9/14

U.S. Cl. 162—73 **6 Claims**

1. A process for bleaching paper pulp comprising: adding a compound selected from the group consisting of caffeine and guanine to paper pulp prior to or during at least one stage of a chlorine bleaching sequence wherein the melamine added is in an amount effective to maintain the pulp viscosity while enhancing brightness during said at least one bleach stage.

4,484,981

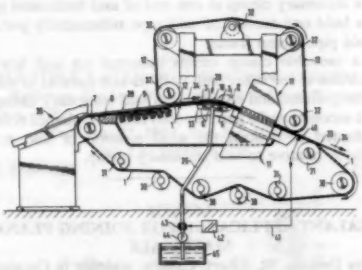
PAPERMAKING DEWATERING APPARATUS HAVING WIRE SUPPORT MEANS WITH COOLING WATER FEED MEANS

Karl-Dieter Furhs, Ebersbach/Fils, and Ulrich Krohn, Leonberg, both of Fed. Rep. of Germany, assignors to Feldmühle Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jul. 26, 1982, Ser. No. 401,705

Int. Cl.³ D21F 1/30, 1/34

U.S. Cl. 162—252 **5 Claims**



1. A paper processing machine comprising: upper wire means and lower wire means arranged to define therebetween a gap through which there is passed in a feed direction sheet material to be treated, both said upper and lower wire means extending so as to be movable on opposite sides of said gap in the feed direction of said sheet material together wih said sheet material;

wire support means comprising a plurality of individual segments consisting essentilly of sintered oxide material which extend across the width of said paper making machine in a direction transversely to said feed direction and which are connected with one another, with a plurality of

said segments being arranged consecutively in said feed direction along the course of said wire means;

dewatering elements operatively associated with said wire means located at a different location than said support means forwardly thereof taken relative to said feed direction and

cooling water feed means;

said segments having a maximum linear expanse of 700 mm per segment taken along said feed direction and having junction areas between said consecutively arranged segments defining a gap for feeding to said wire means through said gap cooling water from said cooling water feed means;

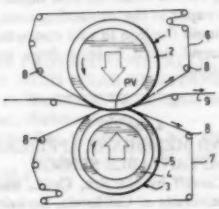
said segments in the area of said gap being connected with a support and being sealed with respect to said support, said support forming a hollow space between adjacent segments below said gap with said cooling water feed means being located in the hollow space below said gap.

4,484,982

EXTENDED NIP PRESS FOR A PAPER MACHINE

Pekka Majaniemi, Pirkkala, Finland, assignor to OY Tampella AB, Tampere, Finland

Filed Jun. 6, 1983, Ser. No. 501,242
Claims priority, application Finland, Jun. 4, 1982, 822130
Int. Cl.³ D21F *3/08*
U.S. Cl. 162—358 **13 Claims**



1. An extended nip press for a paper machine for removing water from a wet paper, cardboard or similar fibrous or porous web, comprising a first rotating press roll and a second rotating press roll, said press rolls being parallel with each other and being pressed against each other with their shell surfaces, and at least one dewatering felt passing between said press rolls for guiding a web to be dried through a press zone and for receiving water removed from said web, at least one of said press rolls being provided with a flexible shell surface in order to produce an extended press zone, whereby said press roll comprises a hard support cylinder and a flexibly compressible shell layer surrounding said cylinder, and a flexible layer in said shell layer surrounding said support cylinder at least corresponding to the width of said web, said flexible layer being formed by disposing a gas-filled cell in at least one liquid-filled cavity arranged in connection with said shell layer.

4,484,983

DISTILLATION AND VAPOR TREATMENT PROCESS

Robert P. Bannon, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 23, 1983, Ser. No. 497,373
Int. Cl.³ B01D *3/14*
U.S. Cl. 203—42 **8 Claims**

1. A process comprising

(a) distilling a multi-component liquid in a distillation column under conditions effective to provide an overhead condensable vapor;

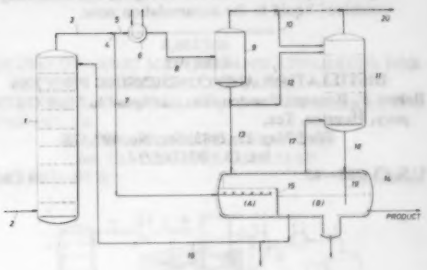
(b) separating the overhead condensable vapor into a major portion and a minor portion;

(c) condensing the bulk of a major portion in a condensation zone, and producing a condensation zone effluent comprising vapor and liquid;

(d) removing condensation zone effluent from the condensation zone and separating the vapor and the liquid of said condensation zone effluent in a separation zone;

(e) separating liquid from the separation zone into major and minor fractions;

(f) passing the minor fraction of liquid from step (e) to a contacting zone and the major fraction of liquid from step (e) to an accumulation zone;



(g) contacting the major fraction of liquid from step (e) in the accumulation zone with at least the bulk of the minor portion of said condensable vapor from step (b);

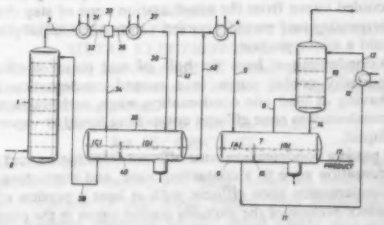
(h) transferring vapor from said accumulation zone to said contacting zone, and contacting transferred vapor in said contacting zone with the minor fraction of liquid from step (e) to provide a liquid composition, and collecting liquid composition in the accumulation zone.

4,484,984

DISTILLATION WITH CONDENSATION PROCESS

Robert P. Bannon, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 23, 1983, Ser. No. 497,374
Int. Cl.³ B01D *3/14*
U.S. Cl. 203—42 **14 Claims**



1. A process comprising:

(a) distilling a multi-component liquid in a distillation column under conditions effective to provide an overhead fraction having a temperature differential of at least 20° F. between its dew point and its bubble point;

(b) condensing a portion of the overhead fraction in a condensation zone having at least one condensation stage, producing a condensation zone effluent comprising vapor and liquid;

(c) removing condensation zone effluent from the condensation zone and separating the liquid from the condensation zone effluent to produce a condensation zone effluent vapor, and accumulating said liquid in an accumulation zone;

(d) removing a first liquid stream from said accumulation

zone, and utilizing said first liquid stream as reflux in said distillation column;

(e) removing a second liquid stream from said accumulation zone, and cooling said stream to a temperature of at least 10° F. below the temperature of the liquid in said accumulation zone, and producing a cooled removed liquid;

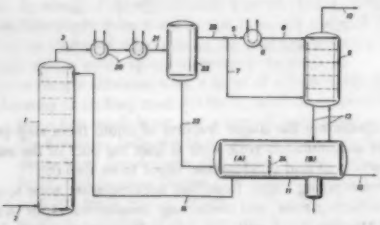
(f) passing condensation zone effluent vapor from step (c) to a contacting zone, and contacting said condensation zone effluent vapor with the cooled removed to condense and absorb components of said vapor in said cooled removed liquid and produce a combined liquid, and collecting the combined liquid in the accumulation zone.

4,484,985

DISTILLATION AND CONDENSING PROCESS

Robert P. Bannon, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 23, 1983, Ser. No. 497,475
Int. Cl.³ B01D 3/14
U.S. Cl. 203—42 **4 Claims**



1. A process comprising

(a) distilling a multi-component liquid in a distillation column under conditions effective to provide an overhead vapor fraction having a temperature differential of at least 20° F. between its dew point and its bubble point;

(b) condensing a portion of the overhead fraction in a first condensation zone having at least one condensation stage, and producing liquid condensate and partially cooled vapor;

(c) passing liquid condensate from the condensation zone of step (b) to an accumulation zone, and passing partially cooled vapor from the condensation zone of step (b) and separating said partially cooled vapor into a major portion and a minor portion;

(d) condensing at least the bulk of said major portion of partially cooled vapor in a second condensation zone having at least one condensation stage, and producing a condensation zone effluent comprising liquid or vapor and liquid;

(e) passing condensation zone effluent from the second condensation zone to a contacting zone, and contacting said condensation zone effluent with at least a portion of the minor portion of the partially cooled vapor in the contacting zone, and producing a liquid fraction; and

(f) collecting the liquid fraction from the contacting zone of step (e) in an accumulation zone.

4,484,986

PROCESS FOR DISTILLATION AND CONDENSATION

Robert P. Bannon, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 23, 1983, Ser. No. 497,476
Int. Cl.³ B01D 3/14
U.S. Cl. 203—42 **22 Claims**

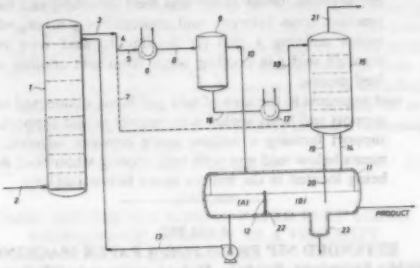
1. A process comprising

(a) distilling a multi-component liquid in a distillation column under conditions effective to provide an overhead condensable vapor;

(b) condensing the bulk of the overhead condensable vapor in a condensation zone, and producing a condensation zone effluent comprising vapor and liquid;

(c) passing condensation zone effluent from step (b) to a separation zone, and separating said condensation zone effluent into a major vapor-liquid fraction and a minor first liquid fraction, and passing said major vapor-liquid fraction to an accumulation zone;

(d) removing said first liquid fraction from said separation



zone and cooling the removed first liquid fraction, and passing the cooled removed first liquid fraction to a contacting zone;

(e) separating vapor from the major vapor-liquid fraction, and contacting cooled removed first liquid fraction with said separated vapor in the contacting zone, and producing a second liquid fraction in said contacting zone; and

(f) collecting second liquid fraction from step (e) in the accumulation zone.

4,484,987

METHOD AND MEMBRANE APPLICABLE TO IMPLANTABLE SENSOR

David A. Gough, Cardiff by the Sea, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed May 19, 1983, Ser. No. 495,988
Int. Cl.³ G01N 27/54
U.S. Cl. 204—1 T **12 Claims**

1. A membrane for disposition with a surface accessible to a body of an aqueous solution of a gas and a stoichiometric excess of a compound reactive with said gas to provide a path between said body and a detector, said membrane comprising hydrophilic material permeable to said gas and to said compound for transport to said detector, immobilized enzyme or catalyst disposed for contact with said gas and said compound along said path for promoting reaction between said compound and said gas and small domains of hydrophobic material permeable to said gas and impermeable to said compound distributed in intimate contact with a continuous phase of said hydrophilic material, said domains being present in quantity, size and arrangement to provide good permeability of the membrane to said gas, to supply said gas to said compound diffusing along said path, to restrict the rate at which said compound enters and/or is transported through said membrane to a value which is a function of the initial concentration of said compound in said solution and is reduced relative to the rate of entry and/or transport of said gas to provide a new concentration ratio of said gas to said compound passing said membrane at least equal to a stoichiometric equivalent and to provide in the path, space and time for substantially complete

reaction of said gas and the said compound at the restricted rate of entry and/or transport of said compound in said membrane.

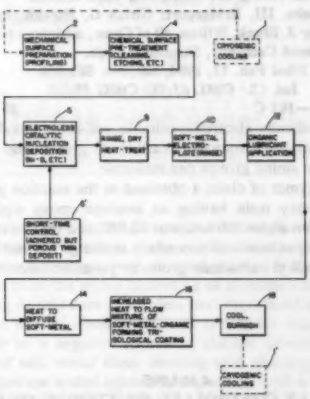
5. The method for determining the concentration of a first component present in stoichiometric excess over a reactive gas component in an aqueous solution, said method comprising the steps of diffusing said components through a membrane providing a continuous path of hydrophilic material for entry and transport of both of said components from a membrane surface accessible to a body of said solution to a detector, contacting said first component and said gas with immobilized catalyst along said path for promoting reaction between said first component and said gas, supplying said gas to said first component diffusing along said path through small domains of hydrophobic material permeable to said gas and substantially impermeable to said first component disposed in a continuous phase of said hydrophilic material along said path in quantity, size and arrangement to provide good permeability of the membrane to said gas and to restrict the rate at which said first component enters and/or is transported through said membrane to a value which is a function of the initial concentration of said first component in said solution and which is reduced relative to the rate of entry and/or transport of said gas component to provide a new ratio of said gas component to said first component passing said membrane at least equal to a stoichiometric equivalent, substantially completely reacting said first component entering said membrane with said gas in the space and time of movement through said membrane and measuring the concentration of any unreacted gas or of the reaction product of said gas and said first component.

4,484,988

PROCESS FOR PROVIDING METALLIC ARTICLES AND THE LIKE WITH WEAR-RESISTANT COATINGS

W. W. Robinson, Richmond, Va., assignor to Richmond Metal Finishers, Inc., Richmond, Va.

Filed Dec. 9, 1981, Ser. No. 328,913
Int. Cl.³ C25D *5/34, 5/48*
U.S. Cl. 204—35.1 **15 Claims**


MECHANICAL SURFACE PREPARATION (PROFILING)
CHEMICAL SURFACE PRE-TREATMENT (CLEANING, ETCHING, ETC.)
CRYOGENIC COOLING
ELECTROLESS CATALYTIC NUCLEATION DEPOSITION (Ni-B, ETC.)
RINSE, DRY HEAT-TREAT
SOFT-METAL ELECTRO-PLATE (RINSE)
ORGANIC LUBRICANT APPLICATION
SHORT-TIME CONTROL (ADHERED BUT POROUS THIN DEPOSIT)
HEAT TO DIFFUSE SOFT-METAL
INCREASED HEAT TO FLOW MIXTURE OF SOFT-METAL/ORGANIC FORMING TRI-BOLOGICAL COATING
COOL, BURNISH
CRYOGENIC COOLING

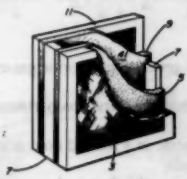
1. A process for imparting improved wearing and friction-resistant surfaces to metallic articles and the like, that comprises, immersing an article surface in a catalytic nucleation plating bath containing a nickel salt and a borohydride reducing agent and controlling the plating to effect a nickel-boron coating at a deposition rate of the order of about half to a few mils per hour; discontinuing the plating nucleation at a fraction of an hour where the coating has adhered to said article surface as a coating of thickness not exceeding 0.09 mil, and still retains voids that provide a porosity of the order of about 20% to 50% more or less to provide a porous surface; heat-treating said surface; electrodepositing upon the said porous surface a deposit of a metal that is substantially softer than said coating and of thickness less than said coating; applying a dry lubricant material to the porous surface; further heat-treating the same to diffuse the softer metal therethrough and to cause the lubricant material and softer metal to flow in molten combined form within the voids of and over the total area of the porous surface, merging therewith; and cooling the article.

4,484,989

ELECTRO ORGANIC METHOD AND APPARATUS FOR CARRYING OUT SAME

John D. Mansell, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 25, 1983, Ser. No. 478,929
Int. Cl.³ C25C *1/00*; C25B *13/00*
U.S. Cl. 204—59 R **4 Claims**



1. A solid permionic membrane comprising a polymeric matrix having crown ethers grafted thereto and metal ions chelated to said crown ethers wherein said crown ether is chosen from the group consisting of 12-crown-4, 15-crown-5, 18-crown-6, and dicyclohexano and dibenzo derivatives thereof.

4,484,990

MIST SUPPRESSANT FOR SOLVENT EXTRACTION METAL ELECTROWINNING

David A. Bultman, and Maynard H. Olson, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 16, 1980, Ser. No. 159,840
Int. Cl.³ C25C *1/12*
U.S. Cl. 204—106 **18 Claims**

1. A process for recovery of metal values by liquid-liquid solvent extraction of said metal values from metal-bearing aqueous solution, stripping of said metal values into acidic aqueous solution containing strong acid, and electrowinning of said metal values from an electrolytic cell, said cell comprising a metallic cathode, one or more insoluble anodes, and electrolyte containing said strong acid and said metal values, said process including recycling of said electrolyte, wherein the improvement comprises electrowinning said metal values from electrolyte containing sufficient fluoroaliphatic surfactant to provide mist-inhibiting foam on the surface of said electrolyte, said surfactant having at least one cationogenic group which is the radical of a base having an ionization constant in water at 25° C. of at least about 10^{-6}, and containing at least about 30 weight percent fluorine in the form of carbon-bonded fluorine in a fluoroaliphatic radical, said fluoroaliphatic radical having at least 4 carbon atoms and at least a terminal perfluoromethyl group.

4,484,991

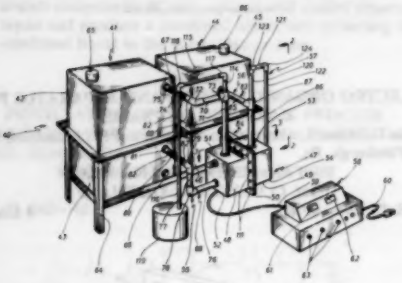
CHLORINE GENERATOR AND METHOD OF GENERATING CHLORINE GAS

Arthur L. Angelo; Baboobhai S. Patel, and Duc T. Bui, All of Houston, Tex., assignors to Aqua Pura, Inc., Houston, Tex.

Filed Feb. 2, 1983, Ser. No. 463,332

Int. Cl.³ C25B *1/10*

U.S. Cl. 204—129 **15 Claims**



1. A method of generating chlorine gas comprising the steps of:

mounting a cathode in a first compartment having upper and lower ends;

mounting an anode in a second compartment having upper and lower ends;

releasably securing the first and second compartments together and disposing a fluorinated polymeric ion-permeable membrane between the first and second compartments;

disposing a first chamber having upper and lower ends and containing water in a fluid transmitting relationship with the first compartment;

disposing a second chamber having upper and lower ends and containing water and sodium chloride in a fluid transmitting relationship with the second compartment;

disposing the first and second chambers in a fluid non-transmitting relationship with respect to each other;

supplying electrical power to the anode and cathode to generate chlorine gas in the second compartment and to heat the water and sodium chloride in the second compartment;

circulating the heated water in the second compartment from the upper end of the second compartment to the upper end of the second chamber;

circulating water and sodium chloride from the lower end of the second chamber into the lower end of the second compartment; and

remove the chlorine gas from the second compartment.

4,484,992

PROCESS FOR THE PRODUCTION OF HYDROGEN BY MEANS OF HETEROGENEOUS PHOTOREDOX CATALYSIS

Niklaus Bühler, Rheinfelden; Jean F. Reber, Riehen; Kurt Meier, Allschwil, and Milos Rusek, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 25, 1982, Ser. No. 342,615

Claims priority, application Switzerland, Feb. 4, 1981, 741/81

Int. Cl.³ B01J *19/12*

U.S. Cl. 204—157.1 R **8 Claims**

1. A process for the selective production of hydrogen by means of heterogeneous photoredox catalysts, which comprises reacting mixtures of water and alkali metal sulfites or sulfides, alkaline earth metal sulfites or sulfides or ammonium sulfites or sulfides under the action of light in a suspension of a cadmium sulfide, cadmium sulfoselenide or titanium dioxide/-semiconductor powder which is at least partially coated with Cu, Cr, Ni, Co or a noble metal or mixtures thereof.

4,484,993

PROCESS FOR PRODUCING FLUORINE-CONTAINING ORGANIC COMPOUND

Nobuo Ishikawa, Yokohama, and Tomoya Kitazume, Tokyo, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Sep. 10, 1982, Ser. No. 416,493

Claims priority, application Japan, Sep. 10, 1981, 56-143109; Nov. 26, 1981, 56-189458; Nov. 26, 1981, 56-189459; Mar. 8, 1982, 57-36129

Int. Cl.³ B01J *19/10*

U.S. Cl. 204—158 HA **29 Claims**

1. A process for producing fluorine-containing organic compounds characterized in that fluorine-containing compounds which are at least one member selected from the group consisting of aliphatic iodides of R_fI, R_fZnI, and R_fSnX_2I (where R_f indicates a fluorine-containing aliphatic group; and X indicates halogen), and fluoroesters of R_fCOOR' (where R_f indicates a fluorine-containing aliphatic group; and R' indicates an aliphatic hydrocarbon group or aromatic hydrocarbon group) are reacted with organic compounds in the presence of ultrasonic wave action, whereby the $R_f$group or the R_fCO group is introduced into the said organic compounds.

4,484,994

HYDROXYALKYL CARBAMATE-CONTAINING RESINS FOR CATHODIC ELECTRODEPOSITION AND METHOD OF MAKING THE SAME

William Jacobs, III, Bridgeport; Girish G. Parekh, Fairfield, and Werner J. Blank, Wilton, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 17, 1984, Ser. No. 581,005

Int. Cl.³ C08L *63/00*; C08G *18/58*

U.S. Cl. 204—181 C **35 Claims**

1. A cathodically electrodepositable, self-cross-linkable polymer containing hydroxyalkyl carbamate groups and one or more tertiary amine groups per molecule.

2. The polymer of claim 1 obtained as the reaction product of (a) an epoxy resin having an average epoxy equivalent weight of from about 300 to about 10,000, and (b) one or more amines having at least one secondary amine group and at least one hydroxyalkyl carbamate group or precursor thereof.

4,484,995

THERMALLY CONTROLLED SPUTTERING OF HIGH ANISOTROPY MAGNETIC MATERIAL

Ronald G. Pirich, Bay Shore, and David J. Larson, Jr., Huntington Station, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

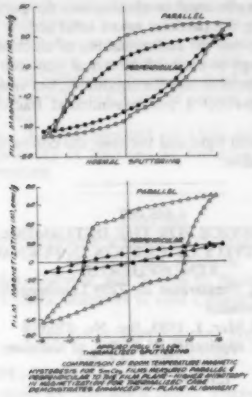
Continuation-in-part of Ser. No. 501,279, Jun. 6, 1983, abandoned. This application Feb. 7, 1984, Ser. No. 577,752

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 M **12 Claims**

1. A method of coating a substrate with a magnetic material composed of a ferromagnetic alloy of a rare earth-transition element mixture which comprises hollow cathode sputtering a ferromagnetic alloy of a rare earth-transition element mixture from multiple sources, wherein each component of said mix-

ture is sputtered from one of said multiple sources, at a temperature of from 200° C. to 1000° C. in an inert atmosphere onto



a substrate to provide a coating thickness on said substrate of from 0.1 microns to 100 microns.

4,484,996

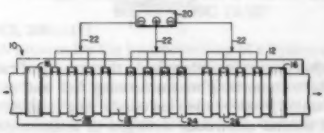
CATHODE FOR USE IN ELECTROLYTIC PROCESSING SOLUTION

Roy C. Bongartz, Indiana Township, Allegheny County; Richard H. Johnston, Harrison Township, Allegheny County; James J. Odasso, Allegheny Township, Westmoreland County, and Donald R. Zaremski, Cheswick, all of Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Mar. 17, 1983, Ser. No. 476,185

Int. Cl.³ C25D *17/00*

U.S. Cl. 204—206 **5 Claims**



1. A cathode adapted for use in electrolytic descaling of a metal product which is made anodic during treatment, said cathode comprising a core of metal sheet of at least one metal selected from the group consisting of aluminum and copper, a cladding on said core of stainless steel sheet bonded to opposite surfaces of said metal sheet, and means for connecting said cathode to a negative source of electric potential, wherein edges of said metal sheet abutting said cladding of stainless steel sheet are sealed against said cladding with a nonconducting sealant.

4,484,997

CORROSION-RESISTANT CERAMIC ELECTRODE FOR ELECTROLYTIC PROCESSES

Duane R. Secrist, Elizabethton, and James M. Clark, Johnson City, both of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Jun. 6, 1983, Ser. No. 501,632

Int. Cl.³ C25C *3/06, 3/12*

U.S. Cl. 204—243 R **9 Claims**

1. A process for producing a ceramic electrode suitable for use in an electrolytic cell comprising:

(a) forming a conductive ceramic substrate comprising a base material and at least one additive material capable of diffusion within said base material;

(b) applying a coating of said base material to said substrate; and

(c) heat-treating the coated substrate under controlled conditions of temperature, pressure, time and atmosphere to diffuse said additive material from said substrate to said coating, wherein the diffusion is terminated before or upon reaching the solubility limits of the additive material in the coating.

4,484,998

ELECTROLYTIC CELL

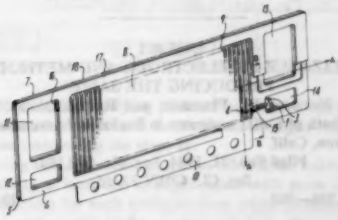
Morris N. Nevin, Frodsham, England, assignor to Imperial Chemical Industries PLC, Hertforshire, England

Filed Nov. 7, 1983, Ser. No. 549,445

Claims priority, application United Kingdom, Nov. 19, 1982, 8233022

Int. Cl.³ C25B *9/00, 15/08*

U.S. Cl. 204—257 **11 Claims**



1. An electrolytic cell of the filter press type comprising a plurality of anodes and cathodes arranged in an alternating manner,

a separator positioned between each adjacent anode and cathode to form in the cell a plurality of anode and cathode compartments, and

a header for electrolyte which header is connected by means of passageways to each of the anode compartments of the electrolytic cell,

characterised in that each passageway comprises a device which is so shaped that in use it creates a vortex flow in the electrolyte flowing from the header to the anode compartments of the cell.

4,484,999

ELECTROLYTIC ELECTRODES HAVING HIGH DURABILITY

Hiroshi Asano, Chiba; Takayuki Shimamune, Tokyo; Hideo Nitta, and Ryuta Hirayama, both of Kanagawa, all of Japan, assignors to Permelec Electrode Ltd., Kanagawa, Japan

Filed Aug. 9, 1983, Ser. No. 521,764

Claims priority, application Japan, Aug. 26, 1982, 57-146939

Int. Cl.³ G25B *11/08*

U.S. Cl. 204—290 R **5 Claims**

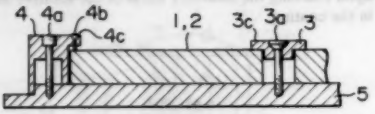
1. An electrolytic electrode comprising (a) an electrode substrate of an electrically-conductive metal; (b) an electrode coating of an electrode active substance; and (c) an intermediate layer provided between said electrode substrate and said electrode coating, said intermediate layer comprising a mixed oxide of (i) an oxide of at least one member selected from the group consisting of titanium (Ti) and tin (Sn), both having a valence number of 4, and (ii) an oxide of tantalum (Ta) having a valence number of 5.

4,485,000

SPUTTERING TARGET SUPPORTING DEVICE

Tatsuzo Kawaguchi, Yokohama, and Mitsutoshi Koyama, Kogasei, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 25, 1984, Ser. No. 603,683
Claims priority, application Japan, Apr. 28, 1983, 58-75098
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **5 Claims**



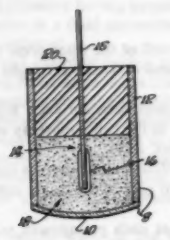
1. A sputtering target supporting device for fixing, to a common electrode, a plurality of beams forming a mosaic target used for co-sputtering, wherein at least one pressing mechanism is provided exclusively for each of the beams to press the respective beam against the common electrode by means of said at least one pressing mechanism provided therefor.

4,485,001

STERILIZABLE PH ELECTRODE AND METHOD FOR PRODUCING THE SAME

John N. Harman, III, Placentia, and Radhakrishna M. Neti, Brea, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Feb. 21, 1984, Ser. No. 582,111
Int. Cl.³ G01N *27/36*
U.S. Cl. 204—408 **29 Claims**



1. A pH electrode which is capable of retaining its pH sensitivity in spite of repeated exposures to sterilizing temperatures, comprising:

(a) an electrode body having a pH sensing member and a support member,

(b) a bed of electrochemically inert particles packed within the electrode body adjacent to the sensing member,

(c) an internal reference at least part of which is embedded in said bed,

(d) a quantity of an electrolyte retained within said bed, the quantity of said electrolyte being large enough to establish electrical continuity between the sensing member and the internal reference, but small enough to prevent destructive pressures from arising within said body when the electrode is exposed to sterilizing temperatures, and

(e) means for sealing the internal reference to the support member.

24. A method for fabricating a pH electrode which is capable of retaining its pH sensitivity in spite of repeated exposures to sterilizing temperatures, said method comprising the steps of:

(a) forming a pH electrode body having a pH sensing member and a support member,

(b) filling at least the portion of the body which is adjacent to the sensing member with electrochemically inert particles,

(c) inserting an electrical conductor into the particles,

(d) compressing the particles into a solid bed,

(e) introducing into the bed a quantity of electrolyte which is large enough to establish electrical continuity between the sensing member and the conductor, but which is small enough to prevent a pressure-initiated fracture of said body, and

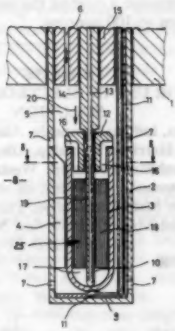
(f) forming a fluid tight seal between the conductor and the support member.

4,485,002

MEASURING DEVICE FOR THE DETERMINATION OF THE ACTIVITY OF CARBON IN FURNACE ATMOSPHERES

Joachim Wunning, Bergstrasse 20, 7250 Leonberg-Warmbronn, Fed. Rep. of Germany

Filed Mar. 1, 1983, Ser. No. 470,996
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1982, 3209438
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—424 **6 Claims**



1. A measuring device for determining the activity of carbon in an atmosphere comprising means forming first and second chambers separated by an oxygen ion conducting solid electrolyte, first and second electrodes arranged in communication with said first and second chambers, respectively, one of said chambers defining a comparison chamber and the other defining a measuring chamber, a first orifice for communcating said measuring chamber with an atmosphere, said comparison chamber containing a carbon supply, and a second orifice communicating said comparison chamber with said measuring chamber.

4,485,003

SUPERCRITICAL EXTRACTION AND SIMULTANEOUS CATALYTIC HYDROGENATION OF COAL

Hubert Coenen; Rainer Hagen, and Ernst Kriegel, all of Essen, Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Jul. 29, 1982, Ser. No. 402,933
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1981, 3133562
Int. Cl.³ C10G *1/06*
U.S. Cl. 208—10 **15 Claims**

1. A process for producing liquid hydrocarbons from coal, comprising:

treating comminuted coal which has a particle size of 1μ to 5 mm with water at 380° to 600° C. and 260 to 450 bar for 10 to 120 minutes in an amount of from 100 to 1000 percent by weight with respect to the coal and

simultaneously with the treatment with the water, adding hydrogen and providing a catalyst to form a charged hydrogenated supercritical gas phase containing hydrogenated organic compounds and a coal residue, the hydrogen being present in an amount of 2 to 10 percent by weight with respect to the coal, the catalyst being selected from the group consisting of NaOH, KOH, Na_4SiO_4, KBO_2 and $NaBO_2$ and being dissolved in water in a quantity of from 0.001 to 0.5 weight percent with respect to the water; and

separating the hydrogenated gas phase into its components in a plurality of fractions by lowering its pressure and temperature.

4,485,004

CATALYTIC HYDROCRACKING IN THE PRESENCE OF HYDROGEN DONOR

Ian P. Fisher, Oakville, and Nicolas G. Samman, Mississauga, both of Canada, assignors to Gulf Canada Limited, Toronto, Canada

Filed Sep. 7, 1982, Ser. No. 415,194
Int. Cl.³ C10G *47/34*
U.S. Cl. 208—112 **27 Claims**

1. A process for upgrading heavy, viscous hydrocarbonaceous oil comprising contacting said oil with a liquid hydrogen donor material, a hydrogen-rich gas and a particulate hydrogenation catalyst in slurry form in a hydrocracking zone at hydrocracking conditions, said hydrocracking conditions including a temperature not lower than substantially 400° C. and not higher than substantially 450° C., to produce a hydrocracked material, said catalyst comprising one of cobalt, molybdenum, nickel, tungsten and mixtures thereof.

4,485,005

HYDROCRACKING WITH A ZEOLITE IN AN ALUMINA BINDER PEPTIZED IN THE PRESENCE OF A SURFACTANT

Mark J. O'Hara, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 482,698, Apr. 6, 1983, Pat. No. 4,459,367. This application Mar. 14, 1984, Ser. No. 589,278
Int. Cl.³ C10G *13/02*
U.S. Cl. 208—111 **3 Claims**

1. A process for the hydrocracking of a hydrocarbon charge stock which comprises hydrocracking said charge stock with hydrogen at hydrocracking conditions in contact with a catalytic composite having improved selectivity to middle distillate product during hydrocracking which comprises alumina, a crystalline aluminosilicate, a Group VIB metal component and a Group VIII metal component and which catalytic composite is prepared by the method comprising:

(a) admixing said alumina and crystalline aluminosilicate with a peptizing agent and an aqueous solution of a modified linear aliphatic polyether surfactant to form a dough;

(b) extruding said dough into discrete particles;

(c) impregnating said particles with a Group VIB metal component and a Group VIII metal component; and

(d) calcining and drying said particles.

4,485,006

START-UP METHOD FOR A HYDROREFINING PROCESS

Omer Bicerogiu, Sarnia, Canada, assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 354,665, Mar. 4, 1982, abandoned. This application Feb. 3, 1983, Ser. No. 463,398
Int. Cl.³ C10G *45/08*
U.S. Cl. 208—216 R **9 Claims**

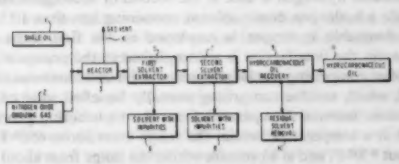
1. In a hydrorefining process which comprises contacting a heavy hydrocarbonaceous oil feed having a boiling point ranging from about 650° to about 1050° F. with hydrogen in the presence of a sulfided hydrorefining catalyst comprising a hydrogenation component selected from the group consisting of Group VIB metal component, Group VIII non-noble metal component and mixtures thereof, and an alumina-containing support, at hydrorefining conditions, the improvement which comprises initially contacting said sulfided catalyst with a hydrocarbonaceous oil lighter than said heavy oil feed, in the presence of hydrogen at a temperature ranging from about 600° to about 700° F., for at least two days, and subsequently contacting said catalyst with said heavy oil feed at said hydrorefining conditions.

4,485,007

PROCESS FOR PURIFYING HYDROCARBONACEOUS OILS

Patrick S. Tam, and James R. Kittrell, both of Amherst, Mass., assignors to Environmental Research and Technology Inc., Concord, Mass.

Filed Jun. 15, 1982, Ser. No. 388,792
Int. Cl.³ C10G *17/02*
U.S. Cl. 208—221 **17 Claims**



1. A process for purifying hydrocarbonaceous oils containing heteroatom sulfur and heteroatom nitrogen compound impurities comprising the steps of:

(1) reacting said hydrocarbonaceous oil with an oxidizing gas containing at least one nitrogen oxide with more than one oxygen atom for each nitrogen atom while maintaining

(a) the molar ratio of the nitrogen oxide to the total of the sulfur heteroatom content and the nitrogen heteroatom content to about 1.5:1 or less,

(b) the reaction time to about one hour or less,

(c) the temperature to about 100° C. or less, and

(d) a conversion of sulfur heteroatom content into gaseous sulfur oxides to about 60% or less on a weight basis;

(2) contacting the oil from step (1) above with

(i) an extracting solvent comprising at least one amine selected from the group consisting of ethylene diamine, monoethanolamine, diethanolamine and mixtures thereof, or a water mixture thereof containing about 50% by weight or less water, and

(ii) an extracting solvent comprising formic acid or a water mixture thereof containing about 50% by weight or less water,

with the contacting with (i) and (ii) being sequential and in any order; and

(3) separating said oil from step (2) above from said extracting solvents;

to recover purified hydrocarbonaceous oil.

8. A process for purifying hydrocarbonaceous oil containing heteroatom sulfur and heteroatom nitrogen compound impurities comprising the steps of:

(1) reacting said oil with an oxidizing gas containing at least one nitrogen oxide with more than one oxygen atom for each nitrogen atom while maintaining

(a) the molar ratio of the nitrogen oxide to the total of the sulfur heteroatom content and the nitrogen heteroatom content to about 1.5:1 or less,

(b) the reaction time to about one hour or less,

(c) the temperature to about 100° C. or less, and

(d) a conversion of sulfur heteroatom content into gaseous sulfur oxides to about 60% or less on a weight basis;

(2) contacting the oil from step (1) above with an extracting solvent comprising ethylene diamine, or a water mixture thereof containing about 50% by weight or less water; and

(3) separating said oil from step (2) above from said extracting solvent
to recover purified hydrocarbonaceous oil.

4,485,008

LIQUEFACTION PROCESS

Peter S. Maa, Baytown; Lavanga R. Veluswamy, Houston, and Lonnie W. Vernon, Baytown, all of Tex., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 213,449, Dec. 5, 1980, abandoned. This application Apr. 7, 1983, Ser. No. 483,076

Int. Cl.³ C10G *1/00, 1/06, 1/08*

U.S. Cl. 208—10 **10 Claims**

1. A process for the liquefaction of a solid carbonaceous material wherein the solid carbonaceous material is at least partially liquefied in a plurality of stages and in the presence of an added hydrogenation catalyst, which catalyst is present in all stages, wherein a solvent containing at least 1.25 wt. % donatable hydrogen is used in the second or subsequent stages while a hydrogen donor solvent containing less than 1.25 wt. % donatable hydrogen is employed in the first stage and wherein the liquefaction is accomplished in the presence of a residue comprising partially liquefied solid carbonaceous material, which residue comprising partially liquefied solid carbonaceous material is separated from the liquefaction product, and at a temperature within the range from about 650° F. to about 950° F. and at a pressure within the range from about 300 to about 3000 psig to produce a gaseous product, a liquid product and a normally solid bottoms product.

4,485,009

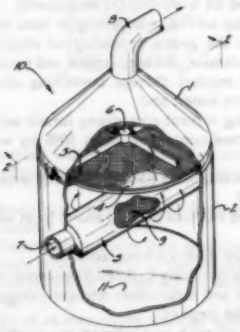
GRANULATION RECOVERY DEVICE AND METHOD

Steve L. Csontos, North Brunswick, and Charles L. Chamberlain, Metuchen, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Jan. 17, 1983, Ser. No. 458,604

Int. Cl.³ B07B *9/00*

U.S. Cl. 209—37 **12 Claims**



1. A device for recovering granulation from a granulation mixture comprising a vacuum head assembly having an aperture at one end for attachment to a source of vacuum, a canister removably attached to said vacuum head assembly and a screen and a membrane which are detachably joined to said recovery device so as to form an interface between said vacuum head assembly and said canister, said canister containing means for diverting said granulation mixture away from said interface during operation while separating said granulation from said mixture and said means additionally containing an aperture for attachment to a source of granulation loss.

4,485,010

WET JIGGING MACHINE FOR DRESSING COAL OR OTHER MINERALS

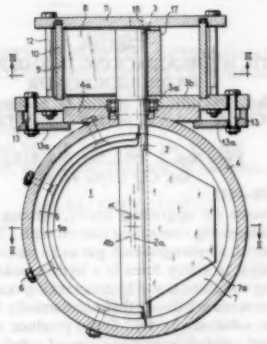
Werner Strauss, Bochum, and Siegfried Heintges, Haltern, both of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Dec. 21, 1982, Ser. No. 451,966

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3150999

Int. Cl.³ B03B *5/24*

U.S. Cl. 209—500 **12 Claims**



1. A wet jig mechanism for handling coal or other minerals wherein a pulsed motion of a liquid mixture is generated by a pulsed compressed air comprising in combination:

a pulsing valve for controlling the pulsed flow of air for a pulsing chamber including, an air conduit;

a valve flap in said conduit supported on a pivotal shaft; and

a valve support and operator means for supporting and pivoting said shaft to open and close said valve, said support means being adjustably pivotal to determine the extent of opening movement of said valve.

4,485,011

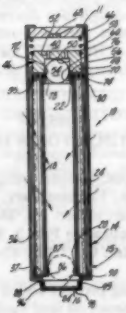
FUEL CONTAMINATION MONITOR WITH A SHUT OFF VALVE

Larry T. Cole, Mt. Clemens; Anthony D. Simone, and Ting C. Tao, both of Troy, all of Mich., assignors to Facet Enterprises, Inc., Tulsa, Okla.

Continuation of Ser. No. 335,500, Dec. 30, 1981, abandoned. This application Jun. 28, 1983, Ser. No. 508,894

Int. Cl.³ B01D *27/10*

U.S. Cl. 210—96.1 **23 Claims**



1. A filtering device for filtering contaminants from a fluid flowing therethrough, and for selectively preventing fluid flow

therethrough when said filtering device has filtered a predetermined amount of contaminants, said filtering device comprising:

a housing having an outer fluid pervious wall for the ingress of said fluid into said housing and an outlet port for the egress of said fluid therefrom;

an inner fluid pervious wall disposed coaxially within said outer fluid pervious wall for the passing of said fluid therethrough, said inner fluid pervious wall having one end adjacent to and in alignment with said outlet port and an opposite end remote from said one end;

an annular cavity between said inner fluid pervious wall and said outer fluid pervious wall;

tubular filtering means, disposed in said annular cavity between said outer fluid pervious wall and said inner fluid pervious wall, for filtering solid particulate and liquid contaminants from said fluid, said tubular filtering means extending axially in said housing and having a first end adjacent said outlet port and a second end adjacent to said opposite end of said inner fluid pervious wall; and

valve means, mounted adjacent to said second end of said tubular filtering means, for normally closing said second end of said tubular filtering means to the passage of said fluid, said valve means having one side exposed to fluid pressure inside said inner fluid pervious wall and an other side opposite said one side and exposed to the fluid pressure outside of said housing so that when a predetermined pressure drop occurs across said valve means, said valve means opens said second end of said tubular filtering element and closes said outlet port of said housing, thereby preventing further fluid flow through said outlet port of said filtering device, said valve means further comprising:

a valve retaining member disposed within said outer fluid pervious wall and abutting against said opposite end of said inner fluid pervious wall; and

a valve member detachably retained in a first closed position by said valve retaining member;

a valve seat adjacent said outlet port for said valve member for selectively closing said outlet port; and

biasing means interposed said housing and said valve retaining member placing a predetermined axial compressive force on said inner fluid pervious wall;

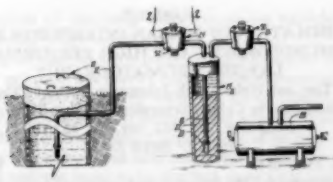
whereby when said predetermined pressure drop occurs across said valve means, said valve member is caused to detach from said retaining member and to coact with said valve seat adjacent to said outlet port and, thereby, to close said outlet port.

4,485,012

ADJUSTABLE MAGNETIC WATER TREATMENT SYSTEM

Ewald Ehresmann, Manly, Iowa 50456

Filed Aug. 16, 1982, Ser. No. 408,149
Int. Cl.³ C02B *1/34*; B03C *1/30*
U.S. Cl. 210—223 **10 Claims**



1. A water treatment system, comprising,

a first water line in communication with means for supplying water at one end and a water filter on the other end,

an alternating current magnet means for generating a magnetic field and vibrations imposed in communication with said first water line so that water flowing therethrough will be subjected to the magnetic field and vibrations thereof,

a second water line extending from said water filter to a water outlet means,

and a direct current magnet means for generating a magnetic field and vibrations imposed in communication with said second water line so that water flowing therethrough will be subjected to the magnetic field and vibrations thereof.

9. An adjustable magnetic water treatment means, comprising:

a housing having means defining inlet and outlet openings,

a hollow insulated alternating current magnetic coil secured to and in said housing,

water flow restriction means mounted in said housing between said inlet and outlet openings adjacent said coil to restrict the flow of water therebetween,

said flow restriction means picking up mechanical vibrations and a magnetic field from said coil so that said vibrations and magnetic field will be imparted by said restriction means to water flowing between said inlet and outlet openings,

said flow restriction means including spaced apart first and second plate elements and means for selectively adjusting the space therebetween, and

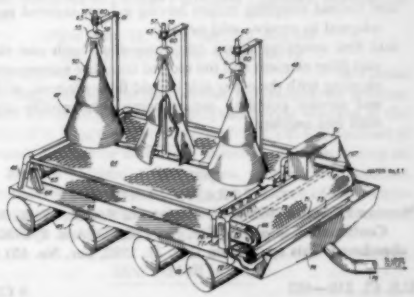
a first shaft threadably secured to said housing and extending through said coil and terminating in said first plate element, said first and second plate elements normally being positioned adjacent said inlet and outlet openings to adjust the flow of water therethrough and to impart said vibrations and magnetic field absorbed from said coil and said housing to such water.

4,485,013

LIQUID SEPARATOR AND PURIFICATION SYSTEM

Haggie I. Cockman, P.O. Box 1600, Sanford, Fla. 32771

Filed Aug. 31, 1981, Ser. No. 297,733
Int. Cl.³ B01D *33/04*
U.S. Cl. 210—242.2 **21 Claims**



1. A liquid purification system comprising in combination:

liquid collection means for collecting liquid for purification;

a liquid line for feeding collected liquid from said liquid collection means;

floating purification means floating on a body of water and connected to said liquid line and having aeration tower means for receiving liquid from said liquid collection means discharged thereon, said floating purification means having a movable filter means located below said aeration tower means for collecting liquid therefrom to remove pollutants from said liquid falling thereon and means to remove collected pollutants from said movable filter means, said floating purification means also including liquid dispersion nozzles mounted over said aeration tower means for dispersing liquid discharged thereinto, which liquids are collected for trickling down said aeration tower, whereby liquid to be purified can be collected

remotely from the purifcation unit, aerated, filtered and oily substances removed from the liquid.

4,485,014

FILTER ASSEMBLY FOR CONNECTING INTERMEDIATE AN EPIDURAL CANNULA AND A SYRINGE

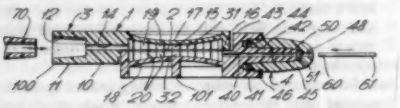
Keith Gilroy, San Marino, Calif., and Mark Johnson, Canterbury, England, assignors to Smiths Industries Public Limited Company, London, England

Filed Nov. 30, 1982, Ser. No. 445,630

Claims priority, application United Kingdom, Dec. 8, 1981, 8136958

Int. Cl.³ B01D *29/42*

U.S. Cl. 210—433.2 **6 Claims**



1. A filter assembly for connecting intermediate an epidural cannula and a syringe and having a housing and a filter element mounted within said housing, said assembly including:

first coupling means at one end of said assembly including a resilient member having a bore therethrough configured to receive an end of the epidural cannula,

a clamping head having an aperture therein aligned with said bore through said resilient member,

said clamping head defining therein a cavity for receiving said resilient member, said clamping head and said housing having cooperating screw threads for screwing said clamping head onto said housing to compress said resilient member between the housing and the clamping head about said cannula to effect a fluid-tight seal between said cannula and said housing;

second coupling means at the opposite end of said housing,

said second coupling means having a Luer-tapered portion adapted to receive said syringe,

said first coupling means communicating with one side of said filter element and the second coupling means communicating with the other side of said filter element, said first and second coupling means being substantially aligned with one another.

4,485,015

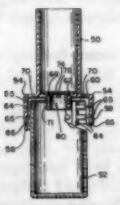
FILTRATION UNIT

Norman H. Smith, 3609 SW. Juneau St., Seattle, Wash. 98126

Continuation-in-part of Ser. No. 136,309, Apr. 1, 1980, abandoned. This application Dec. 21, 1982, Ser. No. 451,879

Int. Cl.³ B01D *23/20*

U.S. Cl. 210—455 **6 Claims**



1. A filtration unit for delivering filtered liquid from blood and other human sera to a sample container, which has a transverse rim and a longitudinal external wall surface, comprising:

(a) a filtration column having a longitudinal axis;

(b) an end cap fixed to the column and being capable of surrounding an open end of the container so that a longitudinal internal surface of the end cap is substantially parallel to an external wall surface of the container to define an area of overlap between the internal and external surfaces;

(c) a plurality of spaced, inwardly projecting connecting ribs attached to the internal surface of the end cap

(1) to frictionally join the column through the end cap to the container by contacting the external wall surface of the container apart from the rim in the area of overlap and

(2) to form a plurality of passages in the area of overlap, each passge being defined by the external wall surface of the container, a pair of connecting ribs, and the internal surface of the end cap, the passages defining the only air vents for the container when connected to the column; and

(d) a plurality of horizontal ribs interspersed between the connecting ribs on the end cap in the area of overlap to provide at least one baffle in each passage, wherein the end cap defines a connection between the column and container through which filtered liquid can pass from the column to the container, and wherein, when filtered liquid enters the container, air vents from the container by passing through a passage defined by the connecting ribs, bending substantially 180° in two 90° elbows and flowing downwardly in a passage adjacent the external surface of the container.

4,485,016

ENZYMATIC REMOVAL OF AROMATIC HYDROXY COMPOUNDS AND AROMATIC AMINES FROM WASTE WATERS

Thomas R. Hopkins, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 494,489, May 13, 1983, abandoned. This application Mar. 30, 1984, Ser. No. 595,142

Int. Cl.³ C02F *1/74*

U.S. Cl. 210—632 **14 Claims**

1. A process for the removal by precipitation of at least one compound selected from the group consisting of aromatic hydroxy compounds or aromatic amines having a water solubility of at least about 0.01 mg/l from water containing the same, which comprises treating while aerating at a pH of about 4 to 11 and a temperature in the range of 0° to 50° C. the water containing said compound with peroxidase, alcohol oxidase and a straight chain C_1 to C_4 alcohol, and wherein the peroxidase, alcohol, and alcohol oxidase are present, respectively, in amounts of from 0.1–10,000 U, 5–10,000 mg, and 0.1–10,000 U per liter of water, thereby precipitating said compound.

4,485,017

ISOLATION OF HUMAN INTERFERON BY IMMUNOSORBENT AND HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

Yin H. Tan, and Heidi Smith-Johannsen, both of Calgary, Canada, assignors to Cetus Corporation, Emeryville, Calif.

Filed Dec. 22, 1982, Ser. No. 452,189

Int. Cl.³ B01B *15/08*

U.S. Cl. 210—635 **12 Claims**

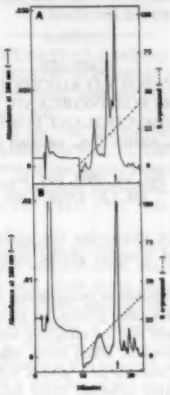
1. A process for the isolation and purification of a lipophilic interferon protein comprising

(a) applying a solution of said protein to an immunosorbent adsorption affinity column;

(b) eluting said protein from said affinity column with an equilibrating buffer;

(c) passing the eluate from said affinity column containing

said protein through a reversed-phase high performance liquid chromatographic column; and



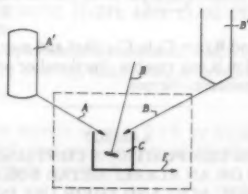
(d) eluting said protein from said chromatographic column with an organic solvent.

4,485,018

PROCESS OF CLARIFYING WATER

Francois Fiessinger, Chaville; Paul Thebault, Teteghem, and Daniel Codiasse, Sartrouville, all of France, assignors to Société Lyonnaise des Eaux et de l'Eclairage, Paris, France

Filed May 27, 1983, Ser. No. 498,936
Claims priority, application France, May 28, 1982, 82 09393
Int. Cl.³ C02F 1/52
U.S. Cl. 210—716 8 Claims



1. A process of clarifying water containing particles suspended therein, which comprises:

preparing an aqueous ferric polychloride solution by mixing, under agitation, one part by volume of an aqueous solution containing about 41% by weight of ferric chloride with 3–75 parts by volume of water having a temperature of at least 85° C., maintaining a temperature of at least 85° C. during said mixing and until said polychloride solution is mixed with the water to be clarified, to provide said polychloride solution having a concentration of 0.05–1.25M calculated as ferric chloride,

introducing into said water to be clarified a clarifying amount of said polychloride solution having a temperature of at least 85° C., to coagulate, flocculate and settle said particles, and

separating said settled particles from the water.

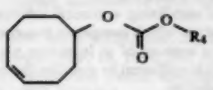
4,485,019

METHOD OF AUGMENTING OR ENHANCING THE AROMA OF PERFUMED ARTICLES USING ALKYL-4-CYCLOOCTENYL CARBONATES

Richard M. Boden, Ocean, and Michael Licciardello, Farmingdale, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 496,649, May 20, 1983, , which is a division of Ser. No. 409,718, Aug. 19, 1982, Pat. No. 4,397,789, which is a continuation-in-part of Ser. No. 318,427, Nov. 15, 1981, abandoned. This application Oct. 17, 1983, Ser. No. 542,476
Int. Cl.³ C11D 3/50
U.S. Cl. 252—8.6 12 Claims

1. A process for augmenting or enhancing the aroma of a perfumed article comprising the step of intimately admixing with a perfumed article base an aroma augmenting or enhancing quantity of at least one 4-cyclooctenyl alkyl carbonate defined according to the structure:



wherein R_4 represents an alkyl group selected from the group consisting of methyl and ethyl.

5. The process of claim 1 wherein the perfumed article is a drier-added fabric softener article or a fabric softener composition.

4,485,020

AMINE TREATMENT OF POLYSACCHARIDE SOLUTION

Lucas K. Shay, and Stephen E. Reiter, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 16, 1983, Ser. No. 523,541
Int. Cl.³ C09K 3/00; C08G 59/40
U.S. Cl. 252—8.55 D 16 Claims

1. A thermostable, viscous xanthan polysaccharide solution prepared by heating a xanthan polysaccharide solution in the presence of at least one C_1 to C_{10} alkyl- or C_3 to C_{10} cycloalkyl substituted primary or secondary mono- or diamine having an upper limit of 15 total carbon atoms, wherein said xanthan polysaccharide solution is heated in the presence of said mono- or diamine at a temperature in the range of about 30° to about 130° C. from about 5 minutes to 120 minutes.

4,485,021

WATER FLOODING PROCESS FOR RECOVERING PETROLEUM

Robert F. Purcell, Roselle, Ill., and Robert B. Kayser, Evergreen, Colo., assignors to Angus Chemical Company, Northbrook, Ill.

Continuation-in-part of Ser. No. 284,764, Jul. 20, 1981, abandoned. This application Sep. 19, 1983, Ser. No. 533,551
Int. Cl.³ E21B 43/22
U.S. Cl. 252—8.55 D 5 Claims

1. In a water-flooding process for recovering petroleum having acidic components from a geological formation containing it, the improvement comprising conducting the water-flooding in the presence of 2-amino-2-methylpropanol in an amount sufficient to form a soap with the acidic components and recovering petroleum from said formation.

4,485,022

LUBRICATING COMPOSITIONS CONTAINING NORMAL-ALKYL SUBSTITUTED 2-THIAZOLINE DISULFIDE ANTIOXIDANTS

J. Ronald Spence, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 24, 1983, Ser. No. 525,912
Int. Cl.³ C10M 1/48
U.S. Cl. 252—32.7 E 14 Claims

1. An improved lubricating composition comprising a major amount of a mineral lubricating oil having incorporated therein a small minor effective amount of at least one normal-alkyl substituted 2-thiazoline disulfide sufficient to stabilize the resulting composition toward oxidation.

4. An improved lubricating composition comprising a major amount of a mineral lubricating oil having incorporated therein a small minor effective amount ranging from about 0.05 to about 10 weight percent of at least one normal-alkyl substituted 2-thiazoline disulfide sufficient to stabilize the resulting composition toward oxidation.

8. A method of stabilizing a mineral lubricating oil against oxidative degradation which comprises incorporating therein a small but effective amount of at least one n-alkyl substituted 2-thiazoline disulfide sufficient to stabilize the resulting composition toward oxidation.

4,485,023

LUBRICATING OIL CONTAINING MANNICH CONDENSATION PRODUCT OF ETHYLENE/PROPYLENE/CARBONYL POLYMERS

Carl Serres, Naperville, and John G. Schaffhausen, Aurora, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 447,446, Dec. 6, 1982, Pat. No. 4,424,317. This application Jul. 25, 1983, Ser. No. 516,880
Int. Cl.³ C10M 1/32
U.S. Cl. 252—51.5 R 17 Claims

1. A lube oil concentrate composition comprising a major portion of a lube oil and a minor portion of a Mannich condensation product of an amorphous, oil soluble olefin/carbonyl polymer, amine and formaldehyde yielding reactant wherein the carbonyl groups are provided by at least one member selected from the group consisting of carbon monoxide and vinyl alkyl ketone.

12. A lube oil composition comprising a lube oil and from about 0.1 to 10 percent neat Mannich condensation product of an amorphous, oil soluble olefin/vinyl alkyl ketone polymer, amine and formaldehyde yielding reactant.

4,485,024

PROCESS FOR PRODUCING A FERROFLUID, AND A COMPOSITION THEREOF

Kyozaburo Furumura, Ninomiya, and Shigeki Matsunaga, Tokyo, both of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1983, Ser. No. 478,876
Claims priority, application Japan, Apr. 7, 1982, 57-56654; Dec. 8, 1982, 57-214015
Int. Cl.³ H01F 1/25; C10M 3/00
U.S. Cl. 252—62.56 13 Claims

1. A process for producing an improved ferrofluid, which comprises:

controlling pH of an aqueous suspension of ferromagnetic fine particles to less than an equipotential point;

adding a surface-active agent and an organic solvent having a low boiling point to said ferromagnetic fine particles to coat each surface of said fine particles with said surface-active agent;

dispersing said thus coated fine particles in said organic solvent to form an intermediate particulate material;

separating ferromagnetic fine particles of bad dispersion from said intermediate particulate material;

mixing a dispersing medium selected from the group of an oil group, an ester group or an ether group with said intermediate particulate material to form a mixture thereof; and

heating said mixture to evaporate said organic solvent to form said improved ferrofluid.

4,485,025

POLYALKYLPOLYALKOXYPOLYSILOXANE STABILIZERS FOR INORGANIC SILICATES IN ANTIFREEZE/COOLANT FORMULATIONS

Jerome W. Darden, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jul. 14, 1983, Ser. No. 513,590
Int. Cl.³ C09K 5/00
U.S. Cl. 252—75 8 Claims

5. A method for improving the gellation resistance of a corrosion inhibited aqueous glycol composition comprising adding to

(a) a glycol composition comprising 85 to 95 percent by weight of an alkylene glycol, an alkylene glycol ether or mixtures thereof and an effective amount to reduce corrosin of an inorganic alkali metal silicate,

(b) an effective amount of a glycol soluble organosiloxane polymer additive selected from the group onsisting of 1,3-dimethyltetramethoxysiloxane and 1,1,3,3-tetramethyl-1,3-diethoxydisiloxane.

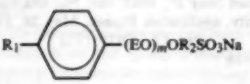
4,485,026

HARD WATER STABILITY IMPROVERS FOR OIL-IN-WATER EMULSIONS HYDRAULIC FLUIDS

Kirk D. Schmitt, Pennington, and Joosup Shim, Wenonah, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,457
Int. Cl.³ C10M 3/04, 3/34
U.S. Cl. 252—78.1 11 Claims

1. A fire resistant lubricant composition comprising an emulsifiable high water content base fluid and an effective amount of an oil-soluble C_1 to C_{36} alkylphenoxypolyethoxylated sulfonate having the following general formula



wherein R_1 and R_2 are C_1 to C_{36} alkyl and may be the same or different, and m is any number, fractional or whole, from 3 to about 24, or mixtures thereof.

4,485,027

CLEANING COMPOSITIONS CONTAINING BORIC ACID OR AN ALKALI METAL BORATE IN PHOSPHORIC ACID AND THEIR USE IN CLEANING SOLID SURFACES

Christian Rossmann, Langenfeld, and Helga Bürger, Erkrath, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 30, 1983, Ser. No. 537,591
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1982, 3246124
Int. Cl.³ C11D 7/06, 7/08, 11/04, 17/00
U.S. Cl. 252—90 9 Claims

1. An aqueous two-component cleaning composition comprising, as one component, (a) a strongly alkaline active-substance concentrate and, as the other component, (b) an acidic active-substance concentrate comprising a dispersion of boric acid or alkali metal borate in orthophosphoric acid in a ratio by weight of from about 1:4 to 1:20, component (a) being present in an excess sufficient to cause an alkaline medium when components (a) and (b) are combined.

9. A process of preparing an aqueous cleaning composition

from the components of claim 1 which comprises adding first one of components (a) and (b) and then the other of components (a) and (b) to water or a substantially aqueous bath.

4,485,028

INORGANIC PERSULFATE CLEANING SOLUTION FOR ACOUSTIC MATERIALS

Jeffrey J. King, Orange, Calif., assignor to Cell Clean Corporation, Inc., Riverside, Calif.

Continuation-in-part of Ser. No. 243,868, Mar. 16, 1981, Pat. No. 4,377,489. This application Mar. 10, 1983, Ser. No. 474,169

The portion of the term of this patent subsequent to Mar. 22, 2000, has been disclaimed.

Int. Cl.[3] **C11D** *3/08, 7/56*

U.S. Cl. 252—99 **12 Claims**

1. A method for cleaning acoustic material with a water soluble oxidizing agent selected from the class consisting of ammonium persulfate and alkali metal persulfate, comprising the steps of: (i) forming a stable, aqueous first solution containing the following components: a cleaning detergent, a soil suspender a solvent, a chelating agent, a pH adjusting agent, and a hydrotrope to maintain the aqueous solution in a single phase, and to stabilize a solution of the oxidizing agent when combined with the solution of the said components; (ii) converting the oxidizing agent from a solid form into an aqueous solution; (iii) mixing the solution of the said components and the oxidizing solution to form a cleaning solution having a stability period of at least about 5 to 10 days, the cleaning detergent being non-reactive with the oxidizing agent, and the pH adjusting agent being present in sufficient quantity to adjust the cleaning solution pH to at least about 8–9; (iv) physically removing a portion of dirt material from the acoustic material; and, (v) applying the cleaning solution to the acoustic material during the stability period to partially dissolve, and redistribute the dirt to a neutral color, and allowing the solvent and water to evaporate.

4,485,029

DISINFECTING METHOD AND COMPOSITIONS

Kenneth H. Kato, Cottage Grove, and Arlene J. Mencke, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 19, 1984, Ser. No. 591,043

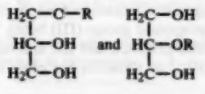
Int. Cl.[3] **A61K** *31/23, 31/235;* **A61L** *13/00;* **C11D** *3/48*

U.S. Cl. 252—106 **22 Claims**

1. An aqueous ophthalmic composition, which is non-irritating to the eyes, for cleaning, disinfecting or preserving contact lenses comprising

(a) water;

(b) an effective amount of up to 0.1% by weight of a first anti-microbial agent consisting essentially of a polyol ester having a formula selected from



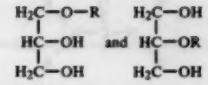
where R is the residue of lauric acid; and

(c) an effective amount of a second anti-microbial agent comprising one or more esters of para-hydroxybenzoic acid.

22. An aqueous ophthalmic composition, which is non-irritating to the eyes, for cleaning, disinfecting or preserving contact lenses comprising

(a) at least 99% water;

(b) 0.0001 to 0.1% by weight of a first anti-microbial agent consisting essentially of a polyol ester having a formula selected from



where R is the residue of lauric acid.

(c) 0.02 to 0.2% of a second antimicrobial agent comprising one or more esters of para-hydroxybenzoic acid; and

(d) 0 to 0.15% of an organic surfactant,

said composition having a pH of from about 5 to 8.

4,485,030

DETERGENT BAR PROCESSING

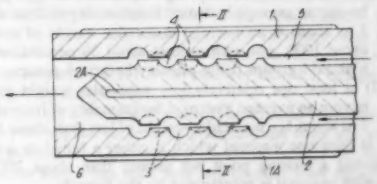
Terence A. Clarke; Richard B. Edwards, and Graeme N. Irving, all of Wirral, England, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 479,620, Mar. 28, 1983, abandoned. This application Mar. 14, 1984, Ser. No. 587,872

Claims priority, application United Kingdom, Mar. 29, 1982, 8209152; Jan. 24, 1983, 8301904

Int. Cl.[3] **B01F** *7/02, 9/00;* **B29B** *1/06;* **C11D** *13/10*

U.S. Cl. 252—108 **12 Claims**



1. The processing of a shear-sensitive soap-containing detergent formulation to control the phases present in the formulation wherein all the material is subjected to substantially even shear by passing the material at an angle through a plurality of shear zone areas formed within the detergent material bulk by relative movement of surfaces between which the material passes, the shear zone areas being formed within the material by entraining temporarily material in the surfaces so that a velocity component of the material is altered by the relative movement during entrainment.

9. A process according to claim 1 wherein a change in the phases present in the material occurs.

4,485,031

COMPATIBLE MIXTURES OF AMINATED POLYETHER POLYOLS AND LOW MOLECULAR WEIGHT GLYCOLS

Franciszek Olstowski, Freeport, and Richard D. Peffley, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 12, 1983, Ser. No. 531,108

Int. Cl.[3] **C09K** *3/00;* **H05B** *33/00*

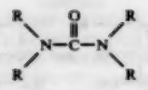
U.S. Cl. 252—182 **6 Claims**

1. A compatible blend comprising

(A) at least one relatively high molecular weight polyol containing at least one terminal primary amine group and having an average molecular weight of at least about 2000;

(B) ethylene glycol; and

(C) at least one material which is either a liquid or has a melting point less than about 200° C. represented by the formula



wherein each R is independently hydrogen or a hydrocarbyl group having a sufficient number of carbon atoms such that the molecular weight of such group is not greater than about 400, but with the proviso that at least one R group is not hydrogen; wherein

(1) components (A) and (B) are present in quantities such that the composition without the presence of component (C) is an incompatible mixture; and

(2) component (C) is present in a quantity sufficient to render the composition compatible.

4,485,032

COMPATIBLE POLYOL BLENDS

Franciszek Olstowski, Freeport, and Richard D. Peffley, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 12, 1983, Ser. No. 531,109

Int. Cl.³ C09K *3/00*; H05B *33/00*

U.S. Cl. 252—182 **10 Claims**

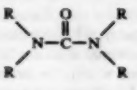
1. A compatible mixture comprising

(A) a normally incompatible mixture comprising

(1) at least one relatively high molecular weight polyol having an average hydroxyl functionality of from about 2 to about 4; an average molecular weight of at least about 1000; and with at least about 30 percent, of the hydroxyl groups being primary hydroxyl groups;

(2) at least one relatively low molecular weight polyol having an average hydroxyl functionality of from about 2 to about 6; a molecular weight of less than about 1000;

(B) at least one material which is either a liquid or a solid having a melting point not greater than about 200° C. which material is represented by the formula



wherein each R is independently hydrogen or a hydrocarbyl group having a sufficient number of carbon atoms such that the molecular weight of such group is not greater than about 400; said material being present in a quantity sufficient to maintain the composition in a single liquid phase for at least about 5 days at about 25° C. without causing gellation.

4,485,033

ADJUVANT FOR PROMOTING ABSORPTION OF PHARMACOLOGICALLY ACTIVE SUBSTANCES THROUGH THE RECTUM

Kazuhiko Kitao, and Ken-ichi Nishimura, both of Kyoto, Japan, assignors to Kyoto Yakuhin Kogyo Kabushiki Kaisha, Kyoto, Japan

Division of Ser. No. 149,132, May 12, 1980, Pat. No. 4,338,306. This application Apr. 2, 1982, Ser. No. 365,021

Claims priority, application Japan, May 10, 1979, 54-57690; Mar. 19, 1980, 55-35128

Int. Cl.³ B01J *13/00*; A01N *61/02*; A61K *31/20, 47/00*

U.S. Cl. 252—315.4 **9 Claims**

1. A pharmacologically-acceptable composition comprising, in intimate admixture, (a) a base suitable for rectal administration of a pharmaceutical and (b) an absorption-promoting amount of adjuvant selected from the group consisting of a nontoxic alkali metal salt of a fatty acid having from 8 to 12 carbon atoms and leucinic acid.

4,485,034

AROMATIC OXAMIDES USEFUL AS STABILIZERS

Lajos Ávár, Biel-Benken, Switzerland; Evelyne Kalt, Riedisheim, France, and Hellmuth Reinshagen, Heitersheim, Fed. Rep. of Germany, assignors to Sandoz Ltd., Basel, Switzerland

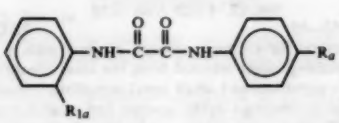
Division of Ser. No. 302,036, Sep. 14, 1981, Pat. No. 4,412,024. This application Sep. 6, 1983, Ser. No. 529,386

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1980, 3035638

Int. Cl.³ C07C *103/38*; C09D *7/12*; C08K *5/20*

U.S. Cl. 252—403 **15 Claims**

1. A mixture of compounds of formula Ia



Ia

in which

R_a is C_{8-18} alkyl

and R_{1a} is methoxy or ethoxy,

said compounds having differing isomers of R_a.

4,485,035

PROCESS FOR PRODUCING HIGHLY STEREOREGULAR α-OLEFIN POLYMERS

Akinobu Shiga; Yoshiharu Fukui; Toshio Sasaki, all of Niihama; Masahisa Okawa, Hirakata, and Hideaki Matsuura, Niihama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 22, 1980, Ser. No. 180,305

Claims priority, application Japan, Aug. 22, 1979, 54-107471

Int. Cl.³ C08F *4/64*

U.S. Cl. 502—115 **26 Claims**

1. A solid catalyst for the polymerization of an olefin produced by reaction among a solid product described below, a compound group (III) comprising at least one aromatic carboxylic monoester and at least one aromatic compound of the formula, Ar—O—R (in which Ar is an aryl group having 6 to 18 carbon atoms, Q is an oxygen or sulfur atom and R is a hydrogen atom or an alkyl group having 1 to 10 carbon atoms) or $(Ar—Q)_kP(Q—R)_{3-k}$ or

(in which Ar is an aryl group having 6 to 18 carbon atoms, Q is an oxygen or sulfur atom, R is a hydrogen atom or an alkyl group having 1 to 10 carbon atoms, Z is a hydrogen atom or a Q—R group, and k is a number satisfying the equation, $1 \leqq k \leqq 3$); and a titanium compound having at least one titanium-halogen linkage, the amount of each of the compound constituting the compound group (III) being 10^{-5} to 0.1 mole per gram of the solid product, and the amount of the titanium compound being 10^{-5} to 10 moles per gram of the solid product, and,

said reaction being carried out in a slurry state at 0° to 150° for 10 minutes or more,

said solid product being produced by reacting an organomagnesium compound represented by the formulae, RMgX (in which R is a hydrocarbon group having 1 to 8 carbon atoms and X is a halogen atom) with at least one of the following halogen-containing compounds (I) and (II),

(I) a halogen-silicon compound of the formula, R_nSiX_{4-n} (in which R is a hydrocarbon group having 1 to 8 carbon atoms, X is a halogen atom and n is a number satisfying the equation, $0 \leqq n < 4$),

(II) a halogen-aluminum compound of the formula,

R_lAlX_{3-l} (in which R is a hydrocarbon group having 1 to 8 carbon atoms, X is a halogen atom and l is a number satisfying the equation, $0 \leq l < 3$), the molar ratio of the organo-magnesium compound to the halogen-containing compound being 1:10 to 10:1, at −50° to 150° C. for 10 minutes or more.

4,485,036
ODORANT COMPOSITIONS CONTAINING MEGASTIGMA-5(11),8-DIEN-4,7-OXIDES AND TETRA-SUBSTITUTED-7-OXA-BICYCLO[3.3.0]-OCTANES

Roman Kaiser, Uster, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

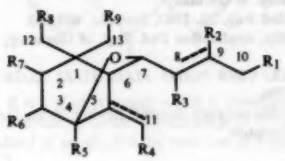
Division of Ser. No. 7,273, Jan. 29, 1979, Pat. No. 4,250,099. This application Sep. 29, 1980, Ser. No. 191,588

Claims priority, application Switzerland, Feb. 9, 1978, 1449/78

Int. Cl.³ C11B 9/00

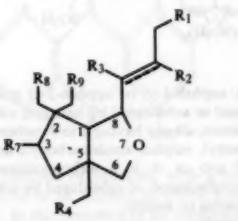
U.S. Cl. 252—522 R **5 Claims**

1. An odorant composition which contains, in admixture with at least one other odor imparting ingredient, a mixture of a compound of the formula:



I

and a compound of the formula:



II

in a ratio of I/II from 4 to 1 to 200 to 1. wherein:

(a) R_1 and R_2 represent a hydrogen atom or a methyl, propyl, vinyl, propenyl or allyl group;

(b) R_3, R_4, R_5, R_6, R_7, R_8 and R_9 each represent a hydrogen atom or a methyl or ethyl group;

(c) the dotted lines represent an optional bond when R_1 and/or R_2 is hydrogen, methyl or propyl, and an obligatory bond when R_1 and/or R_2 represents a propenyl, vinyl or allyl group; and

(d) the 5,11 double bond is only saturated when the remainder of the molecule is saturated.

4,485,037
NAIL POLISH REMOVER

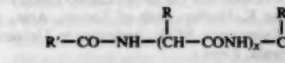
Ernest S. Curtis, Naugatuck, Conn., assignor to Chesebrough-Pond's Inc., Greenwich, Conn.

Filed Aug. 2, 1983, Ser. No. 519,649

Int. Cl.³ C11D 1/94; A61K 7/047

U.S. Cl. 252—546 **9 Claims**

1. In an aqueous acetone-based nail polish remover containing at least about 80% acetone, the improvement wherein the remover comprises in solution (a) from 0.01% to 0.15% of a cosmetically acceptable water soluble amine salt of a fatty acid amide of a hydrolyzed collagen of the formula



wherein R is the side chain of a primary or α-amino acid polymer unit of the hydrolyzed collagen, x is an integer from about 20 to 40, and R'—CO— is an acyl radical of the amidizing fatty acid of from 5 to 18 carbon atoms, and (b) from 0.1% to 0.8% of a cosmetically acceptable acid addition salt of a mono-fatty acid-amido substituted-trialkylamine cationic surfactant, in amounts effective to reduce substantially the nail water removal activity of the acetone of the polish remover.

4,485,038
METHOD FOR THE PRODUCTION AND PURIFICATION OF HUMAN LEUKOCYTE INTERFERON

Kailash C. Chadha, West Seneca, and Eugene Sulkowski, Buffalo, both of N.Y., assignors to Health Research (Roswell Park Division), Buffalo, N.Y.

Filed Oct. 19, 1982, Ser. No. 435,295

Int. Cl.³ C07C 103/52; A61K 45/02; C12P 21/00; C07G 7/00

U.S. Cl. 260—112 K **15 Claims**

1. A process for purifying human interferon derived from human leukocytes or lymphoblastoid cells to remove the inducing virus and other protein contaminants, to increase the specific activity of the final interferon produced about 1000 fold, and to obtain an overall interferon recovery of at least 70%, which process is carried out in a moderately acidic environment wherein the pH is never lower than 4.5, comprising the following steps in succession:

a. subjecting a solution of crude interferon to chromatography on a glass sorbent material selected from the group consisting of Controlled-pore Glass (CPG) or Silicic Acids which has been first equilibrated with phosphate buffer to a pH between about 6.0–8.0;

b. eluting the interferon bound to said glass sorbent material with a hydrophobic electrolyte solution having a pH between about 6.0–9.0 selected from the group consisting of an alkylamine or a cosolvent mixture comprising an electrolyte selected from the group consisting of sodium chloride or ammonium chloride combined with a polarity reducing agent selected from the group consisting of ethylene glycol and propylene glycol, either separately or in combination, for a time sufficient to produce an effluent containing said interferon;

c. adjusting the pH of said effluent to between about 4.5–6.0 and thereafter subjecting said effluent to chromatography on a carboxymethyl derived cation exchange medium which has been first equilibrated with any known suitable buffer solution to a pH of about 4.5–6.0;

d. eluting the interferon bound to said cation exchange medium with an eluant comprising a solution of salt and any known suitable buffer, said eluant having a final pH between about 4.5–9.0, for a time sufficient to produce an effluent containing said interferon;

e. subjecting the effluent obtained in step (d) to chromatography on a phenyl-agarose hydrophobic sorbent material having a sorbent density between 30–50μ moles per ml, which has first been equilibrated with a buffering solution comprising a solution of salt and a suitable known buffer; and

f. displacing the interferon bound to said hydrophobic sorbent material with an eluant comprising a mixture of about 50%–70% ethylene glycol and a buffer, thereby producing an interferon containing effluent having a final average specific activity between about 1×10^6–1×10^7 ref. units/mg of protein depending upon the titer of the crude interferon starting material.

4,485,039

SYNTHETIC ANALOGUES OF α-MELANOTROPIN

Victor J. Hruby; Mac E. Hadley, both of Tucson, Ariz., and Tomi K. Sawyer, Kalamazoo, Mich., assignors to University Patents, Inc., Norwalk, Conn.

Filed Jun. 11, 1982, Ser. No. 387,424

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **8 Claims**

1. Cyclic α-melanotropin stimulating hormone analogues wherein a physiologically stable intramolecular interaction exists (1) between the amino acid residue at position 4 and an amino acid residue at position 10 or 11, and/or (2) between the amino acid residue at position 5 and an amino acid residue at position 10 or 11.

4,485,040

PROCESS FOR OBTAINING AN α-LACTALBUMIN ENRICHED PRODUCT FROM WHEY, AND USES THEREOF

Loïc Roger, Rennes; Jean-Louis Maubois, La Barre-Guibourg; Gérard Brulé, and Michel Piot, both of Rennes, all of France, assignors to Institut National de la Recherche Agronomique, Paris, France

Continuation of Ser. No. 162,641, Jun. 24, 1980, abandoned. This application Jan. 8, 1982, Ser. No. 338,136

Claims priority, application France, Jun. 26, 1979, 79 16482

Int. Cl.³ C07G *7/00*

U.S. Cl. 260—122 **26 Claims**

1. A process for obtaining an α-lactalbumin enriched product from raw acid whey or mixed whey, comprising:

(a) adjusting the pH of the whey to between about 6.3 and 7, whereby a pH-adjusted whey is obtained,

(b) subjecting the pH-adjusted whey to a first ultrafiltration on a membrane having a molecular weight cut-off adapted to retain soluble proteins, whereby a first ultrafiltrate is obtained,

(c) separating the first ultrafiltrate,

(d) subjecting the first ultrafiltrate to a second ultrafiltration on a membrane having a MW cut-off adapted to retain β-lactalbumin whereby a retentate is formed, and

(e) collecting the retentate.

4,485,041

WATER-SOLUBLE METAL FREE OR COPPER TRIAZINO-BIS-[HYDROXY-NAPHTHYLAMINO]-DISAZO DYESTUFFS CONTAINING FIBER REACTIVE GROUPS, AND A PROCESS FOR DYEING OR PRINTING CELLULOSE FIBERS

Ernst Hoyer; Fritz Meininger, both of Frankfurt am Main, and Rudolf Fass, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

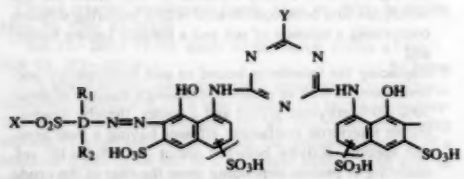
Continuation of Ser. No. 76,755, Sep. 18, 1979, abandoned, which is a continuation of Ser. No. 956,409, Oct. 31, 1978, abandoned. This application Feb. 17, 1981, Ser. No. 234,966

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1977, 2748965

Int. Cl.³ C09B *62/09, 62/095, 62/533, 62/535*

U.S. Cl. 534—637 **13 Claims**

1. A water-soluble dyestuff which in the form of the free acid has the formula



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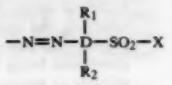


in which

D is the benzene nucleus or the naphthalene nucleus;

R_1 is in the ortho-position relative to the azo group on D and is hydrogen, halogen, lower alkyl, lower alkoxy, hydroxy, carboxy or sulfo and

R_2 is hydrogen, halogen, lower alkyl, lower alkoxy, nitro or sulfo,

R_1 and R_2 being identical or different from one another;

X is β-thiosulfatoethyl, vinyl or β-sulfatoethyl; and Y is chlorine, fluorine or bromine.

4,485,042

DYESTUFF CONTAINING AT LEAST THREE AZO BRIDGES

Norbert Armbrecht, Sulzbach; Wolfgang Bauer, Maintal, and Joachim Ribka, Offenbach-Bürg[illegible], all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

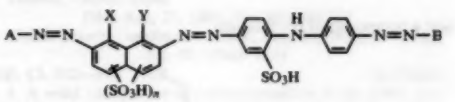
Filed Aug. 20, 1982, Ser. No. 409,958

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1981, 3134063

Int. Cl.³ C09B *29/045, 31/18, 33/22, 35/24*

U.S. Cl. 534—796 **7 Claims**

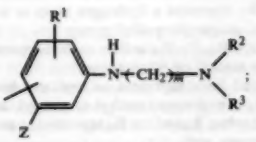
1. Water-soluble polyazo dyestuff having, in the form of the free acid, the formula



wherein

A is phenyl, naphth-1-yl or naphth-2-yl each of which is unsubstituted or substituted by halogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, cyano, nitro, carboxyl, sulpho, amidocarbonyl, amidosulphonyl, or phenyl azo or A is a 4-(benzothiazol-2-yl)-phenyl which is unsubstituted or substituted by alkyl having 1 to 4 carbon atoms or sulpho;

B has the formula



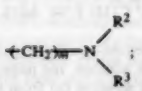
n is the number 1 or 2;

m is a number from 1 to 4;

X is hydroxyl or amino;

Y is hydroxyl or amino but X differs from Y;

Z is hydroxyl or amino unsubstituted or substituted by alkyl having 1 to 4 carbon atoms, alkanoyl having 1 to 4 carbon atoms or by a moiety of the formula



R^1 is hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy

having 1 to 4 carbon atoms or alkoxyalkoxy having 3 to 7 carbon atoms; and

R^2 and R^3 independently of one another are each hydrogen or alkyl having 1 to 4 carbon atoms.

4,485,043

PROCESS FOR PRODUCING 1-AMINO-4-HYDROXY-ANTHRAQUINONES

Paul Kniel, Muttenz, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

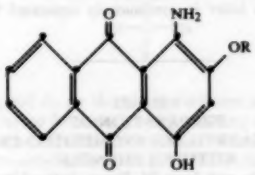
Filed Jul. 19, 1982, Ser. No. 399,232

Claims priority, application Switzerland, Jul. 30, 1981, 4943/81

Int. Cl.³ C07C *97/26*

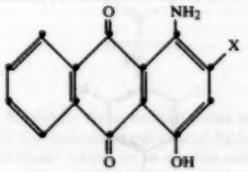
U.S. Cl. 260—380 **14 Claims**

1. A process for producing a 1-amino-4-hydroxyanthraquinone of the formula 1



(1)

wherein R is a phenyl group which is unsubstituted or substituted by chlorine, bromine, C_1–C_4-alkyl or C_1–C_4-alkoxy, or it is the radical of an alcohol, by reaction of a compound of the formula 2



(2)

wherein X is chlorine or bromine, with a compound ROH, which is a phenol or an alcohol, in which R has the meaning defined above, in the presence of an alkaline-acting agent, in which process the reaction s carried out in an organic solvent which is not a phenol or an alcohol, in the presence of a quaternary ammonium salt, a phosphonium compound or a crown ether, as phase-transfer catalyst and when the ROH compound is a phenol, there are used a total of 1 to 1.5 mols of phenol compound per anthraquinone compound of the formula (2) and when the ROH compound is an alcohol, there are used a total of 2–10 mols of alcohol per mol of the anthraquinone compound of the formula (2).

4,485,044

SULFURIZED ESTERS OF POLYCARBOXYLIC ACIDS

Karl P. Kammann, Jr., Crown Point, and Paul F. Thompson, Munster, both of Ind., assignors to Ferro Corporation, Cleveland, Ohio

Filed Feb. 24, 1982, Ser. No. 351,842

Int. Cl.³ C08H *3/00*

U.S. Cl. 260—399 **5 Claims**

1. An additive composition, comprising one or more sulfurized esters of an unsaturated dibasic carboxylic acid, wherein:

(a) the unsaturated dibasic carboxylic acid moiety of the unsaturated esters comprises the addition product of linoleic acid and acrylic acid;

(b) the alcohol moiety of the unsaturated esters comprises a monohydric alcohol having from about 8 to about 22 carbon atoms per molecule; and

(c) the sulfur moiety comprises bound sulfur, present in an amount from about 2.0 wt. % to about 8.0 wt. %, based on the sulfurized ester product, introduced into the unsaturated ester by heating with elemental sulfur at a temperature within the range from about 300° F. to about 400° F.

4,485,045

SYNTHETIC PHOSPHATIDYL CHOLINES USEFUL IN FORMING LIPOSOMES

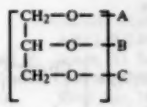
Steven L. Regen, Milwaukee, Wis., assignor to Research Corporation, Tucson, Ariz.

Continuation-in-part of Ser. No. 280,633, Jul. 6, 1981,. This application May 26, 1982, Ser. No. 382,296

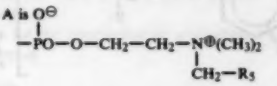
Int. Cl.³ A23J *7/00*; C07F *9/10*

U.S. Cl. 260—403 **5 Claims**

1. A compound of the structure



in which A is



B and C are each —CO—R_1 or —CO—R_2; in which —CO—R_1 is a fatty acid acyl group of at least 6 carbons, and —CO—R_2 is —CO—$(CH_2)_n$—O—CO—CR_3=CHR_4 in which n is greater than 4, and R_3 and R_4 are each hydrogen or methyl; R_5 is hydrogen or —CH_2—D, wherein D is —CO—R_2 and at least one of B, C, and D is present in the compound as —CO—R_2.

4,485,046

PRODUCTION OF CUPRIC AND MANGANOUS ALKANOATES

Olan S. Fruchey, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Sep. 28, 1982, Ser. No. 426,018

Int. Cl.³ C11C *1/00*

U.S. Cl. 260—413 **11 Claims**

1. A process for producing a mixture of cupric and manganous alkanoates containing from 6 to 9 carbon atoms comprising (1) thermally decomposing a mixture of cupric oxalate and manganous oxalate in the presence of an organic saturated aliphatic monocarboxylic acid containing from 6 to 9 carbon atoms in the absence of oxygen, producing the corresponding manganous alkanoate in admixture with metallic copper, (2) oxidizing said metallic copper to the cupric form in the presence of oxygen, and (3) reacting said copper in the cupric form with said acid to produce the corresponding cupric alkanoate.

4,485,047

COPPER AND MANGANESE OXIDATION CATALYSTS RECOVERY FROM AQUEOUS SOLUTIONS

Olan S. Fruchey, and Edward M. de la Garza, both of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Feb. 15, 1983, Ser. No. 466,448

Int. Cl.³ C11C *1/00*; C07F *1/08, 11/00*

U.S. Cl. 260—413 **7 Claims**

1. A process for recovering water soluble cupric and manganous compounds present in water which comprises reacting a saturated aliphatic monocarboxylic acid containing 5 to 9

carbon atoms with said cupric and manganous compounds at temperatures about 190° C. to form cupric and manganous alkanoates containing 5 to 9 carbon atoms, and simultaneously removing the water by distillation in the presence of sufficient oxygen-containing gas to prevent the copper from plating on the distillation equipment and recovering said cupric and manganous alkanoates.

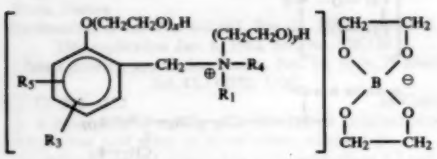
4,485,048

ETHOXYLATED QUATERNARY BENZYL COMPOUNDS

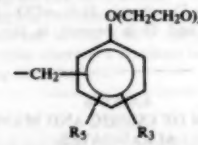
James M. Richmond, Naperville, and Keith D. Stanley, Downers Grove, both of Ill., assignors to Akzona Incorporated, Enka, N.C.

Filed Aug. 9, 1982, Ser. No. 406,413
Int. Cl.³ C07F 5/04
U.S. Cl. 260—462 R 7 Claims

1. A compound having the formula:



wherein R_1 is selected from the group including C_5–C_{22} alkyl or alkenyl; R_3 and R_5 are independently selected from the group including hydrogen or C_1–C_{12} alkyl or alkenyl; R_4 is either $-(CH_2CH_2O)_xH$, or



or C_5–C_{22} alkyl or alkenyl; and x, y, and z are integers of 1 or more and whose sum is between 2 and 15.

4,485,049

TWO-STAGE CRYSTALLIZATION OF NITRILOTRIACETONITRILE FROM A HOT SOLUTION

Kent P. Lannert, Freeburg, Ill.; Chung Y. Shen, and Dat S. Trieu, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 3, 1983, Ser. No. 455,394
Int. Cl.³ C07C 121/43
U.S. Cl. 260—465.5 R 15 Claims

1. A two-stage process for producing crystalline nitrilotriacetonitrile from a solution of nitrilotriacetonitrile and water in excess of 95° C., comprising:

a. feeding the nitrilotriacetonitrile-water solution to a first stage where it is being cooled to the range of about 70° C. to about 90° C. with a sojourn time at this first stage, at least about 10 minutes to produce a nitrilotriacetonitrile-water slurry; and

b. further cooling the nitrilotriacetonitrile-water slurry in a second stage to below 35° C. wherein vacuum cooling is employed in said second stage.

4,485,050

PROCESS FOR THE CONTINUOUS PRODUCTION OF TETRACHLOROPHTHALONITRILE IN A FLUIDIZED BED REACTOR

Liborio Casale, and Giordano Donelli, both of Brescia, Italy, assignors to Caffaro S.p.A., Milan, Italy

Filed May 13, 1983, Ser. No. 494,285
Int. Cl.³ C07C 121/56
U.S. Cl. 260—465 G 9 Claims

1. A process for the continuous production of tetrachlorophthalonitrile in a fluidised bed reactor, characterised in that molten atomised phthalonitrile and a gaseous mixture of chlorine, hydrochloric acid and possibly nitrogen are simultaneously fed by way of the bottom of the reactor to below the grid for the fluidised bed, constituted by activated carbon, the gaseous mixture being in a quantity sufficient to vaporise the phthalonitrile and to keep the activated carbon bed fluidised, and in that following the reaction between Cl_2 and phthalonitrile in the fluidised bed with the production of tetrachlorophthalonitrile, this latter is continuously separated by suitable cooling.

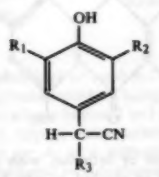
4,485,051

PREPARATION OF 4-(α-HYDROCARBYL-α-CYANOMETHYL)-2,6-DI-SUBSTITUTED PHENOLS

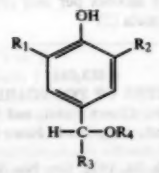
Charles R. Everly, and Jerry M. Roper, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jul. 20, 1983, Ser. No. 515,660
Int. Cl.³ C07C 121/75, 69/66
U.S. Cl. 260—465 F 23 Claims

1. A process for the preparation of 4-(α-hydrocarbyl-α-cyanomethyl)2,6-di-hydrocarbyl-substituted phenol having the formula

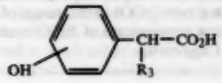


wherein R_1 and R_2 are the same or different monovalent substituents selected from the group consisting of alkyl, aralkyl and cyclic alkyl radicals and R_3 is selected from hydrogen, hydrocarbyl radicals, substituted hydrocarbyl radicals and hydrocarbyloxy radicals which comprises reacting a 4-(α-hydrocarbyl-α-hydrocarbyloxy-methyl)2,6-di-hydrocarbyl substituted phenol having the formula

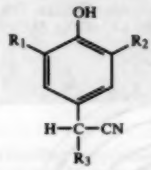


wherein R_1 R_2 and R_3 are as defined above and R_4 is selected from hydrocarbyl radicals and substituted hydrocarbyl radicals with an alkali metal cyanide or an alkaline earth metal cyanide in an inert reaction solvent to form said 4-(α-hydrocarbyl-α-cyanomethyl)2,6-di-hydrocarbyl substituted phenol.

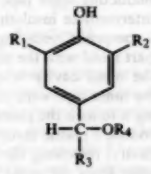
12. A process for preparing α-hydrocarbyl-4-hydroxyphenylacetic acid having the formula



wherein R_3 is selected from hydrogen, hydrocarbyl radicals, substituted hydrocarbyl radicals and hydrocarbyloxy radicals which comprises (i) preparing a 4-(α-hydrocarbyl-α-cyanomethyl)-2,6-di-hydrocarbyl substituted phenol having the formula



wherein R_1 and R_2 are the same or different monovalent substituents selected from the group consisting of alkyl, aralkyl and cyclic alkyl radicals, and R_3 is as defined above by reacting a 4-(α-hydrocarbyl-α-hydrocarbyloxymethyl)2,6-di-hydrocarbyl substituted phenol having the formula



wherein R_1, R_2 and R_3 are as defined above and R_4 is selected from hydrocarbyl radicals or substituted hydrocarbyl radicals with an alkali metal cyanide or an alkaline earth metal cyanide in an inert reaction solvent to form said 4-(αhydrocarbyl-α-cyanomethyl)2,6-di-substituted phenol, (ii) dealkylating the substituent groups ortho to the hydroxyl group from said 4-(α-hydrocarbyl-α-cyanomethyl)2,6-di-substituted phenol to form the corresponding 4-(α-hydrocarbyl-α-cyanomethyl)-phenol, and (iii) converting said 4-(α-hydrocarbyl-α-cyanomethyl)phenol by hydrolysis to the corresponding α-hydrocarbyl-4-hydroxyphenylacetic acid.

4,485,052

PROCESS FOR THE PREPARATION OF PHOSPHONOUS ACIDS

Hans-Jerg Kleiner, Lronberg, and Hubert Neumaier, Brühl, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

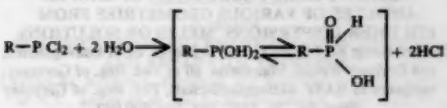
Filed Nov. 19, 1982, Ser. No. 443,133

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1981, 3146196

Int. Cl.³ C07F *9/48*

U.S. Cl. 260—502.4 R **9 Claims**

1. A process for the preparation of a phosphonous acid which comprises contacting dichlorophosphane with a reagent consisting essentially of water at a temperature of about 60° to about 100° C., wherein the dichlorophosphane is hydrolyzed according to the reaction



wherein R is an organic radical and maintaining the temperature at about 60° to about 100° C. throughout the course of the hydrolysis.

4,485,053

PROCESS FOR THE PRODUCTION OF ARYLSULFONYL ISOCYANATES

Donald R. James, El Sobrante, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 18, 1983, Ser. No. 486,142

Int. Cl.³ C07C *143/79*; C07D *333/00*

U.S. Cl. 260—545 R **7 Claims**

1. A process for the production of arylsulfonyl isocyanates having the formula

$$ArSO_2NCO$$

in which Ar represents phenyl, substituted phenyl, phenoxyphenyl, substituted phenoxyphenyl, thienyl, furyl, naphthyl or substituted naphthyl, comprising reacting an arylsulfonylamide having the formula

$$ArSO_2NH_2$$

with thionyl chloride and chlorocarbonylsulfenyl chloride in the presence of a catalytic amount of a tertiary base.

4,485,054

METHOD OF ENCAPSULATING BIOLOGICALLY ACTIVE MATERIALS IN MULTILAMELLAR LIPID VESICLES (MLV)

Michael Mezei, and Fredric J. Nugent, both of Halifax, Canada, assignors to Lipoderm Pharmaceuticals Limited, Nova Scotia, Canada

Filed Oct. 4, 1982, Ser. No. 432,686

Int. Cl.³ A61K *9/50*; B01J *13/02*

U.S. Cl. 264—4.6 **15 Claims**

1. A process for producing large multilamellar lipid vesicles comprising the steps of:

(a) providing a vessel partially filled with inert, solid contact masses;

(b) providing a lipid component dissolved in a suitable organic solvent within said vessel;

(c) removing the organic solvent by evaporation so as to form a thin lipid film on the inner wall of said vessel and on the surfaces of said contact masses;

(d) thereafter adding an aqueous liquid to said vessel and agitating same to form an aqueous dispersion of lipid; and

(e) allowing said dispersion to stand essentially undisturbed for a time sufficient for the multilamellar vesicles to form.

4,485,055

REPRODUCIBLE PRODUCTION OF SHAPED ARTICLES OF VARIOUS GEOMETRIES FROM POLYMER DISPERSIONS, MELTS OR SOLUTIONS

Richard Bung; Karl Gans; Gerold Schreyer, all of Ludwigshafen, and Gerhard Welzel, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 20, 1982, Ser. No. 400,047

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1981, 3128872

Int. Cl.³ B01J 2/02

U.S. Cl. 264—8 8 Claims

1. A process for the repeatable production of shaped particles of various geometries from a liquid form product such as a polymer dispersion, melt or solution, said process comprising: centrifugally expelling said liquid form product from a rotating member in the form of particles, and introducing said particles while still liquid, in a radially outward direction, into a rotating liquid film of precipitant or fixant whereby said particles are coagulated or fixed and also given an additional structure and are transported away from the point of introduction.

4,485,056

PRODUCTION OF AROMATIC POLYIMIDE SEPARATING MEMBRANES

Hiroshi Makino; Yoshihiro Kusuki; Takashi Harada; Hiroshi Shimazaki, and Tosio Isida, all of Ichihara, Japan, assignors to Ube Industries, Ltd., Chiba, Japan

Filed Jun. 3, 1982, Ser. No. 384,495

Claims priority, application Japan, Jun. 22, 1981, 56-95388

Int. Cl.³ B29D 27/00

U.S. Cl. 264—41 15 Claims

1. A process for producing an aromatic polyimide separating membrane, comprising the steps of:

(A) preparing a dope solution containing an aromatic polyamic acid dissolved in a polar organic solvent at a temperature not above about 100° C., said polyamic acid having been prepared by polymerizing a carboxylic acid component consisting essentially of at least one aromatic tetracarboxylic acid compound selected from the group consisting of 3,3',4,4'- and 2,3,3',4'-biphenyl tetracarboxylic acids, 3,3',4,4'-benzophenone tetracarboxylic acid, 2,2-bis (3,4-dicarboxyphenyl) propane, bis (3,4-dicarboxyphenyl) methane, bis (3,4-dicarboxyphenyl) sulfone, bis (3,4-dicarboxyphenyl) ether, bis (3,4-dicarboxyphenyl) thioether, pyromellitic acid and acid anhydrides, salts and lower alcohol esters of the above acids, with a diamine component consisting of at least one aromatic diamine compound at a temperature of 120° C. or less in a polar organic solvent consisting essentially of at least one member selected from the group consisting of acetamide, formamide, N,N-dimethylformamide, N,N-dimethylacetamide, N,N-diethylacetamide, dimethylsulfoxide, diethylsulfoxide, hexamethylphosphoric amide, N-methyl-2-pyrrolidone, pyridine, dimethylsulfones, tetramethylenesulfone, dimethyltetramethylenesulfone, tetramethyl urea, tetraethyl urea and N-methyl caprolactam

(B) forming a thin film of said aromatic polyamic acid dope solution;

(C) bringing said thin film of said aromatic polyamic acid dope solution into contact with a coagulating liquid containing at least 60% by volume of at least one member selected from the group consisting of water and lower aliphatic alcohols having 1 to 5 carbon atoms at a temperature not higher than 60° C., to form a coagulated membrane of said aromatic polyamic acid;

(D) drying said coagulated membrane of said aromatic polyamic acid; and

(E) heating said dried aromatic polyamic acid membrane at a temperature of 100° C. to 300° C. whereby said aromatic polyamic acid membrane is converted to a separating porous aromatic polyimide membrane which exhibits a hydrogen gas-permeating rate (ρH_2) not lower than 5×10^{-5} cm^3/cm^2 sec cmHg and a ratio ($\rho H_2/CO$) of the hydrogen gas-permeating rate (ρH_2) to carbon monoxide gas-permeating rate (ρCO) in the range of from 2.0 to 10, determined at a temperature of 30° C. under a pressure of from 0.5 to 1 kg/cm^2G.

4,485,057

METHOD OF PRODUCING INSULATED PIPELINE COMPONENTS

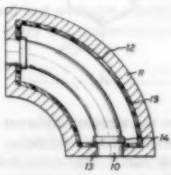
Olle Kristensson, Lycksele, and Bo R. G. Nyström, Vindeln, both of Sweden, assignors to Lindab Nord AB, Lycksele, Sweden

Filed Feb. 16, 1983, Ser. No. 466,862

Claims priority, application Sweden, Feb. 23, 1982, 8201114

Int. Cl.³ B29D 27/04

U.S. Cl. 264—45.7 4 Claims



1. A method of producing insulated pipeline components consisting of a fluid-conducting inner pipe, an outer casing of rigid plastic, and an intermediate insulating layer of foamed plastic material, which comprises centering the inner pipe in a mold cavity of a two-part mold with the pipe ends protruding therefrom; charging the mold cavity whose dimensions are greater than those of the inner pipe with plastic powder; closing the mold and heating it to melt the plastic powder and then rotating the mold to produce a plastic layer around the contact surfaces of the mold cavity; removing the inner pipe and the surrounding plastic jacket from the mold after the mold has cooled; supplying an expandable plastic material to the space between the inner pipe and the jacket and expanding the expandable plastic material to form said insulating layer.

4,485,058

PROCESS FOR PRODUCING HOLLOW WATER-ABSORBING POLYESTER FILAMENTS

Togi Suzuki; Kiyokazu Tsunawaki, both of Matsuyama; Osamu Wada, Takatsuki, and Akio Kimura, Ashiya, all of Japan, assignors to Teijin Limited, Osaka, Japan

Division of Ser. No. 171,335, Jul. 23, 1980, Pat. No. 4,361,617. This application Sep. 27, 1982, Ser. No. 424,252

Claims priority, application Japan, Jul. 26, 1979, 54-94189; Sep. 11, 1979, 54-115730

Int. Cl.³ B29C 25/00

U.S. Cl. 264—49 14 Claims

1. A process for producing hollow water-absorbing polyester filaments comprising the steps of:

(A) preparing hollow polyester filaments each having at least one hollow extending in parallel to the longitudinal axis of said filament, from a blend of (a) a principal polyester component which comprises an acid moiety comprising at least one aromatic dicarboxylic acid or its ester-forming derivative and a glycol moiety comprising at least one alkylene glycol having 2 to 6 carbon atoms or its ester-forming derivative, with (b) a cave-forming agent, and;

(B) removing at least a portion of said cave-forming agent and a portion of said principal polyester component from said resultant hollow polyester filaments by treating them with an alkali aqueous solution to cause each of said hollow polyester filaments to be provided with a number of caves distributed in at least a portion of the body of each

filament, and consisting of a number of fine outside concaves formed in the peripheral surface thereof, a number of fine pores formed within the body thereof, a number of fine inside concaves formed in the hollow surface thereof, and a number of fine channels through which said pores are connected to each other and to said outside concaves and said inside concaves, said outside and inside concaves

X 3000

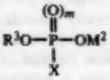
and said pores extending approximately in parallel to the longitudinal axis of each filament, said cave-forming agent selected from the group consisting of:

(i) copolyester which comprises a glycol compound moiety, an aromatic dicarboxylic acid compound moiety and an additional divalent organic sulfonic acid compound moiety of the formula (II):

(II)

wherein Z represents a member selected from the group consisting of trivalent aromatic hydrocarbon radicals and trivalent aliphatic hydrocarbon radicals; M^1 represents a member selected from the group consisting of hydrogen and metal atoms; R^1 represents an ester-forming organic radical and R^2 represents a member selected from the group consisting of a hydrogen atom and ester-forming organic radicals;

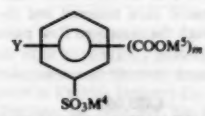
(ii) phosphorus compounds of the formula (III):



(III)

wherein R^3 represents a monovalent organic radical; X represents a member selected from the group consisting of $—OR^4$, wherein R^4 represents a hydrogen atom or a monovalent organic radical, $—OM^3$, wherein M^3 represents a metal atom, and a monovalent organic radical; M^2 represents a metal atom and; m represents zero or 1, and;

(iii) aromatic carboxy-sulfonic acid compounds of the formula (IV):



(IV)

wherein Y represents a member selected from the group consisting of a hydrogen atom and ester-forming organic raidcals, M^4 represents a metal atom, M^5 represents a metal atom and n represents an integer of 1 or 2, and; (2) each of said outside and inside concaves and said pores has a longitudinal size of at the largest 50 times the lateral size thereof, which is in a range of from 0.01 to 3 microns.

4,485,059

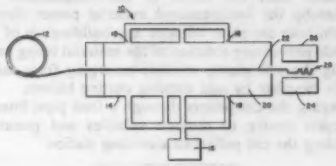
POLYMER FOAM THERMOFORMATION PROCESS AND APPARATUS THEREFOR

Charles M. Krutchen, Pittsford, and Wen-Pao Wu, Victor, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 28, 1983, Ser. No. 489,427

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—51 **7 Claims**



1. A method of thermoforming comprising:

(a) providing a continuous sheet of thermoplastic polymeric foam;

(b) transporting said sheet thru an atmosphere of at least predominantly steam at a temperature of at least 215° F., any non-steam component being composed of air;

(c) maintaining said sheet in said atmosphere for a time sufficient to cause a decrease in its density;

(d) thereafter while under the influence of said temperature, deforming at least a portion of said sheet to a predetermined shape; and

(e) while so-deformed, cooling the same to cause retention of said shape.

4,485,060

PROCESS FOR PREPARING DUST-FREE PARTICLES

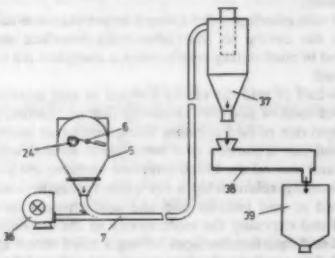
Peter Franz, Birsfelden, and Hans Seipp, Pratteln, both of Switzerland, assignors to Buss AG, Basel, Switzerland

Continuation of Ser. No. 205,324, filed as PCT EP79/00096, Dec. 6, 1979, published as WO80/01148, Jun. 12, 1980, § 102(e) dated Aug. 5, 1980, abandoned. This application Aug. 4, 1982, Ser. No. 405,245

Claims priority, application Switzerland, Dec. 7, 1978, 12513/78

Int. Cl.³ B29B *1/02*

U.S. Cl. 264—102 **4 Claims**



1. A continuous process for the production of dust-free uniform small particles from soft reactive plastic and volatile ingredients including fillers, additives and hardeners which quickly harden after they are mixed to become thermosetting, said process comprising:

first pre-mixing the reactive and volatile and additive ingredients in a mixing and kneading material preparation machine to form a soft mixture;

passing said soft mixture through a tube, and

then homogenizing the mixture in a heated pelleting ma-

chine comprising a continuously slow working heatable and coolable conveyor screw arranged in a heatable and coolable housing which is fitted at the outlet end with a heated multi-hole die-plate and rotating cutting knives, the length L of said conveyor screw being from 3 to 5 times the diameter D thereof and the number of revolutions of the conveyor screw amounting to from 10 to 25 revolutions per minute, in which the conveyor screw flight has a pitch of the screw of about 0.5 D and has a thick core in relation to the outer diameter and is arranged in a housing divided by web ridges into longitudinal channels, in which housing the width of the web ridges is smaller than the depth of the longitudinal grooves whereby the homogenized material passes through the multi-hole die-plate without any building up of pressure while preventing rotation of the material being processed;

cutting the soft plastic mixture emerging from said multi-hole die-plate by said rotating cutting knives;

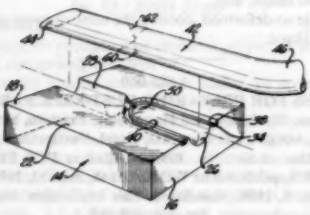
conveying the cut pellets through a feed pipe fitted with a suction device to remove volatiles and pneumatically feeding the cut pellets to a cooling station.

4,485,061

METHOD AND APPARATUS FOR FORMING ROUNDED ENDS ON PLASTIC FILAMENTS

David S. Akhavi, Westwood, and Richard W. Cudworth, Upland, both of Calif., assignors to Iolab Corporation, Covina, Calif.

Filed Sep. 15, 1983, Ser. No. 532,349
Int. Cl.³ B29C *17/12*
U.S. Cl. 264—161 **9 Claims**



1. A die for cold-forming a round end on small plastic filaments comprising:

first and second generally rectangular die blocks each having opposite sides and an interface side joining said opposite sides;

each of said interface sides formed to provide one-half of an open die cavity so that when said interface sides are placed in confronting relationship, a complete die cavity is formed;

the one-half of said die cavity formed in said interface surface of each of said blocks having first an channel extending into one of said opposed sides, having an interior end formed into a portion of a hemisphere so that when said first and second die block interface surfaces are placed in confronting relationship a complete hemispherical end is formed at said interior end and said channel having an open end exposing the mold cavity to the atmosphere;

each of said interface surfaces having a relief recess spaced a fixed distance from the peripheral edge of said first channel and extending along the periphery of said first channel;

each of said interface surfaces having a very narrow land area approximately a knife edge between said relief recess and said first channel peripheral edge;

each of said interface surfaces having a second channel extending into the other of said opposite sides coaxially with said first channel and communicating with said first channel through a small aperture so that when said interface sides are placed in confronting relationship, said first and second channels will be in communication.

5. A process for forming a round end on a small plastic filament, said filament having a proximal end and a distal end, said process comprising the steps of:

cold-forming a hemispherical portion on said filament at a point spaced from the distal end of said filament;

during said cold-forming, exerting an axially aligned, distally directed force on the portion of said filament located distally of said hemispherical portion; and whereby substantially all excess material is laterally displaced from the surface of said filament during the cold-forming of said hemispherical portion, via a land area into a relief recess, but leaving at least a portion of said displaced material connected to said filament with a thin flash of filament material;

after said cold-forming is completed, cutting the portion of said filament located distally of said hemispherical section from said filament; and,

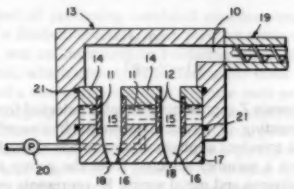
removing any flash and displaced material from the remaining filament to leave a smooth, rounded end.

4,485,062

PROCESS FOR EXTRUDING POLYMERS

James W. Dawes, Orange, and Donald J. Ryan, Beaumont, both of Tex., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 5, 1983, Ser. No. 510,811
Int. Cl.³ B29F *3/06*
U.S. Cl. 264—171 **20 Claims**



1. A process for making polymeric extrudates having a smooth surface which comprises feeding a molten polymeric core material, having a bulk viscosity of about 3×10^3–10^6 Pa.s at processing temperatures of about 100°–250° C., under positive pressure through a die cavity wherein a portion of the wall of the die cavity is a rigid microporous structure located upstream from a narrowed flow passage of the die cavity said microporous structure having a substantially uniform pore size, simultaneously forcing under pressure through the microporous structure about 0.03–10%, based on the total weight of the extrudate, of a low viscosity liquid having a bulk viscosity of about 10^{-1}–10^3 Pa.s at processing temperatures of about 100°–250° C. to form a sheath on the molten polymeric core material that substantially coats its surface thus displacing the polymeric core material from contact with the die wall before the resulting sheath-core composite enters the narrowed flow passage of the die cavity, said process conducted under such conditions as to produce a pressure drop across the microporous structure of about 0.25–20 MPa more than the pressure applied on the polymeric core material and the sheath-core composite flows through the narrowed flow passage of the die cavity and the die orifice.

4,485,063

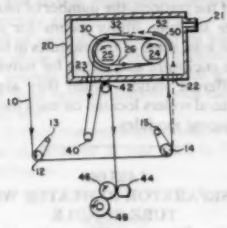
PROCESS FOR DRAWING POLYAMIDE YARN

Alfred N. Good, Hixson, Tenn., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Sep. 15, 1983, Ser. No. 532,447
Int. Cl.³ B29C *17/02*
U.S. Cl. 264—235.6 **4 Claims**

1. An improved coupled process for drawing a polyamide

yarn in first and second stages assisted by heat in at least the second stage followed by annealing the drawn yarn by heating at constant length prior to winding it into a package where the yarn is annealed by making multiple wraps around a pair of first and second heated rolls which are maintained at a constant temperature within an enclosure by means of a circulating hot-air environment wherein the improvement comprises heat-



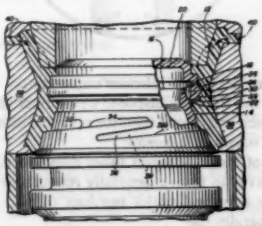
ing the yarn within the enclosure to assist the second stage drawing by diverting the yarn from a path which contacts the surface of at least the second of said pair of rolls on its first pass around the rolls by means of a curved, environmentally-heated metal shoe which heats the yarn and reduces its drawing tension before drawing is completed and the yarn speed reaches the surface speed of the rolls.

4,485,064

ANTIBACTERIAL SEAL

Dean Laurin, Lake Zurich, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 6, 1982, Ser. No. 366,022
Int. Cl.³ B29D *3/00*; B65D *81/24*
U.S. Cl. 264—242 **17 Claims**



1. The method of applying to a container having an inner closure, a plastic outer closure about the inner closure to define a sealed juncture area, the plastic of said outer closure being sealingly incompatible with said inner closure to permit said outer closure to be movable relative to said inner closure, the improvement comprising molding said plastic outer closure in place on the inner closure, said inner closure functioning as a mold core, and releasing an antibacterial agent from the plastic outer closure, whereby an antibacterial effect is exerted in said juncture area.

4,485,065

METHOD FOR FORMING BOTTLE CLOSURE

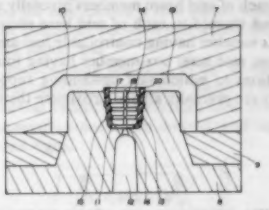
Yoshiharu Hatakeyama, and Shinichi Kozuka, both of Tokyo, Japan, assignors to Yoshida Industry Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 426,159
Claims priority, application Japan, Mar. 30, 1982, 57-49986; Apr. 8, 1982, 57-49924[U]
Int. Cl.³ B29C *5/08*; B29D *9/00, 31/00*
U.S. Cl. 264—255 **4 Claims**

1. A method for forming a bottle enclosure, said method comprising:

forming of a soft thermoplastic synthetic resin material a hollow sealing member having a frusto-conical configuration, an outer surface having extending therefrom circumferential projections, a first open end and a second end having therein an opening;

disposing said sealing member in a molding die defining a cavity having a generally T-shaped configuration in elevation, with said first end of said sealing member projecting into a horizontal portion of said cavity;



injecting a hard thermoplastic synthetic resin material through said opening in said second end of said sealing member and thereby into said cavity; and

cooling said hard resin material to thereby form a closure cap while embedding said first end of said sealing member in a horizontal section of said closure cap, and thereby integrally mounting said sealing member around a vertical section of said closure cap.

4,485,066

METHOD OF MAKING ELASTOMER-COATED HOT ROLL

Vernon M. Balthis, Boulder; Howard E. Evans, and James C. Minor, both of Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 8, 1983, Ser. No. 464,820
Int. Cl.³ B44D *5/00*
U.S. Cl. 264—341 **8 Claims**

1. In a method of making a xerographic hot roll, for use in a hot roll fuser, wherein a filler-containing elastomeric sleeve is ground to form a generally circular-cylinder shape, the improvement comprising:

treating the ground external surface of the sleeve with a strong elastomer-solvent, which dissolves said external surface, to thereby cause a filler-free external surface skin to form on said sleeve, thereby improving the sleeve's paper/toner release property.

4,485,067

FUEL TRANSFER MANIPULATOR FOR LIQUID METAL NUCLEAR REACTORS

Robert H. Sturges, Jr., Plum Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 29, 1982, Ser. No. 344,250
Int. Cl.³ G21C *19/22*
U.S. Cl. 376—270 **2 Claims**

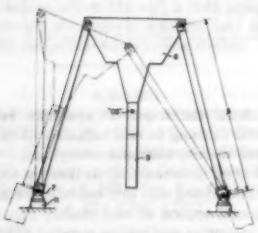
1. A fuel assembly transfer device for a liquid-metal fast-breeder nuclear reactor, said transfer device operable to transfer individual fuel assemblies to and from a first fuel chute arising from the vessel of said reactor and a second fuel chute arising from a fuel assembly storage pit, said fuel chutes being spaced a predetermined distance from one another and inclined toward each other at predetermined angles with respect to the vertical, said fuel assembly transfer device positioned above said fuel chutes and comprising:

a transfer chamber having a base portion and enclosing moving portions of said transfer device and extremities of said fuel chutes, means for maintaining an inert gas atmosphere within said transfer chamber, and said chutes pro-

jecting through the base portion of said transfer chamber and opening into said transfer chamber in axially spaced relationship;

a first pair of base plate members affixed to the base portion of said transfer chamber and laterally spaced on either side of said first fuel chute, a second pair of base plate members affixed to the base portion of said transfer chamber and laterally spaced on either side of said second fuel chute;

four upstanding supporting beam members of predetermined length, each of said beam members pivotally affixed at the lower end thereof to each of said base plate members, a hoist box member having controllable fuel-assembly hoisting means, said hoist box member having four upper corner portions to which said upstanding supporting beam members are pivotally affixed proximate their upper ends,



and a hoist tube member rigidly affixed to said hoist box member and extending downwardly therefrom; and said upstanding supporting beam members together with said hoist box member and said affixed hoist tube member being pivotally movable to align said hoist tube member either with said first tube chute or said second tube chute; and

actuating means for controllably moving said hoist box member and said hoist tube member and pivoting said supporting beams to cause said hoist tube member to move laterally to and from an aligned orientation with said first tube chute and said second tube chute in order to permit transfer of fuel assemblies, said actuating means is controlled from a location exteriorly of said transfer chamber, and said fuel-assembly hoisting means is controlled from a location exteriorly of said transfer chamber.

4,485,068

INSTALLATION FOR STORING AND/OR TRANSFER OF DANGEROUS PRODUCTS

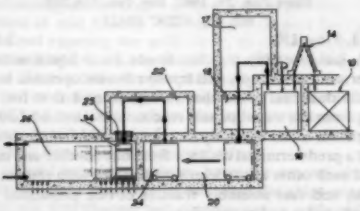
Maurice Moulin, Palaiseau, and Jean Vivien, Les Clayes-sous-Bois, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 9, 1981, Ser. No. 272,005

Claims priority, application France, Jun. 13, 1980, 80 13210

Int. Cl.³ G21C *19/06, 19/32, 19/40*

U.S. Cl. 376—272 **15 Claims**



1. An installation for the storage of nuclear fuel assemblies, wherein it comprises a storage enclosure having side walls and adapted to contain nuclear fuel assemblies therebetween, at least one station for loading and unloading said nuclear fuel assemblies from above said side walls by lowering and raising said nuclear fuel assemblies, and a plurality of storage station, each station for loading and unloading and each of said storage stations being located in said enclosure, modules each of which receives nuclear fuel assemblies, each of these modules being located in one of the stations, the number of modules being less than that of the stations, lifting means for creating a fluid cushion below at least some of the modules in order to raise the latter within the enclosure and means for moving the modules between the different stations when they are raised by the lifting means, lateral rollers located on each module to cooperate with the adjacent modules.

4,485,069

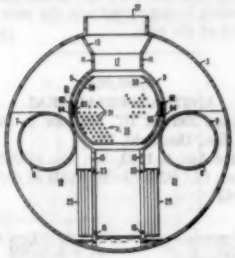
MOISTURE SEPARATOR REHEATER WITH ROUND TUBE BUNDLE

Wilbur M. Byerley, Riverview, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 20, 1982, Ser. No. 341,036

Int. Cl.³ G21C *15/00;* **F22G** *1/00;* **F22B** *1/16, 37/26*

U.S. Cl. 376—405 **4 Claims**



1. A moisture separator reheater comprising:

a generally horizontally disposed cylindrical shell;

a head on each end of said shell forming end closures for said moisture separator reheater;

a plurality of long U-shaped tubes disposed in a generally parallel array to form a generally round tube bundle with shell side inlet and outlet portions of said tube bundle being generally flat;

a tubesheet having a plurality of holes which receive the ends of the tubes, said ends of said tubes being in a sealed relationship with said holes;

a plurality of tube supports spaced along the length of said tube bundle;

a pair of arcuate plates disposed on opposite sides of said tube bundle and fastened to said tube supports forming a wrapper subtending only the round portions of said tube bundle;

a pair of cylindrically shaped elongated plates disposed longitudinally in the central portion of said shell, said cylindrically shaped plates having generally horizontal upper and lower margins which generally extend the length of the shell;

a plurality of upper elongated plates which extend from the upper margins of said cylindrically shaped plates to the upper portions of the shell;

a plurality of lower elongated plates which extend downwardly from the lower margins of said cylindrically shaped plates toward the lower portion of said shell;

said upper, lower and cylindricaly shaped plates and said shell being cooperatively associated in a sealed relationship to form within the shell a central chamber flanked by two side chambers;

openings in said lower plates placing the side chambers in fluid communication with the central chamber;

moisture separating means disposed adjacent the openings in said lower plates;

a sliding sealed juncture disposed between adjacent arcuate and cylindrically shaped plates, said sliding sealed juncture generally extending the length of said plates to provide a seal and sliding engagement between said arcuate and cylindrically shaped plates to allow easy installation and removal of said tube bundle within said central chamber and to allow for differential thermal expansion between said arcuate and said cylindrical shaped plates;

a fluid inlet in fluid communication with each side chamber in said shell; and

a fluid outlet in fluid communication with the upper portion of said central chamber in said shell to form a moisture separator reheater.

4,485,070

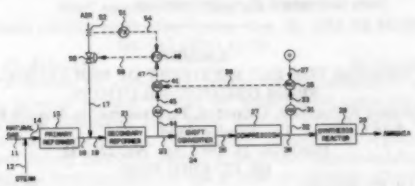
CONTROL APPARATUS FOR AN AMMONIA MANUFACTURING PROCESS

Gary L. Funk, and Terry E. Bland, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 18, 1983, Ser. No. 476,700

Int. Cl.³ G01N *35/00*; B01J *8/04*; C01C *1/04*; G05D *11/00*

U.S. Cl. 422—62 **5 Claims**



1. Apparatus comprising:

a primary reformer;

means for providing a hydrocarbon-containing feed stream to said primary reformer, wherein at least a portion of said hydrocarbon-containing feed stream is converted to carbon monoxide and hydrogen in said primary reformer;

a secondary reformer;

means for providing the effluent from said primary reformer to said secondary reformer;

means for providing air to said secondary reformer, wherein at least some additional carbon monoxide is formed in said secondary reformer;

a shift converter;

means for providing the effluent stream withdrawn from said secondary reformer to said shift converter, wherein a substantial portion of the carbon monoxide contained in the effluent stream withdrawn from said secondary reformer is converted to hydrogen in said shift converter;

compression means;

means for passing the effluent from said shift converter through said compression means to form a synthesis gas;

an ammonia synthesis reactor;

means for providing said synthesis gas to said ammonia synthesis reactor, wherein hydrogen and nitrogen contained in said synthesis gas are converted to ammonia in said ammonia synthesis reactor;

means for establishing a first signal representative of the actual hydrogen to nitrogen ratio in said synthesis gas;

means for establishing a second signal representative of the desired hydrogen to nitrogen ratio in said synthesis gas;

means for comparing said first signal and said second signal and for establishing a third signal which is responsive to the difference between said first signal and said second signal, wherein means are provided so that said third signal is scaled so as to be representative of the ratio of hydrogen and carbon monoxide to nitrogen in the effluent stream withdrawn from said secondary reformer required to maintain the actual hydrogen to nitrogen ratio in said synthesis gas substantially equal to the desired ratio represented by said second signal;

means for establishing a fourth signal representative of the actual hydrogen and carbon monoxide to nitrogen ratio in the effluent stream withdrawn from said secondary reformer;

means for comparing said scaled third signal and said fourth signal and for establishing a fifth signal which is responsive to the difference between said scaled third signal and said fourth signal; and

means for manipulating the flow of air to said secondary reformer in response to said fifth signal to thereby maintain the actual hydrogen to nitrogen ratio in said synthesis gas substantially equal to the desired ratio represented by said second signal.

4,485,071

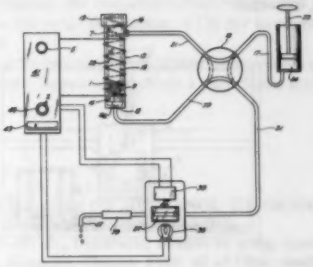
FIELD SOURCE ROCK EVALUATION APPARATUS

Stephen R. Larter, Lake Elsinore, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed May 16, 1983, Ser. No. 494,725

Int. Cl.³ G01N *31/12*, *33/24*

U.S. Cl. 422—78 **2 Claims**



1. An apparatus for determining the hydrocarbon potential of a source rock comprising hydrocarbons and insoluble organic material capable of generating hydrocarbons upon pyrolysis which comprises:

(a) a solvent reservoir for holding a solvent for hydrocarbons,

(b) a receptacle for receiving a particulate sample of a source rock,

(c) detecting means operable to measure the hydrocarbon content of a solution comprising said solvent; and

(d) means adapted to sequentially prepare a first sample comprising the hydrocarbons initially present in said source rock and a second sample comprising the hydrocarbons that may be generated by pyrolysis of said source rock comprising,

(1) valve-conduit means, including a valve rotatable between a first and second position, said valve-conduit means being operable to establish sequential fluid communication between said reservoir, said receptacle and said detecting means when said valve is rotated to said first position and said valve being operable to fluid-tightly isolate said receptacle from said reservoir and said detecting means when said valve is rotated to said second position,

(2) syringe means operably associated with said reservoir to transport solvent from said reservoir to said receptacle when said valve is rotated to said first position, and

(3) heating means operably associated with said receptacle to heat said solvent, when said valve is rotated to said second position, said heating means including first temperature regulating means to heat said solvent to a first temperature suffi-

cient to dissolve said initially present hydrocarbons, but insufficient to pyrolyze said insoluble organic matter, and second temperature regulating means to heat said solvent to a second temperature sufficient to pyrolyze said insoluble organic material.

4,485,072

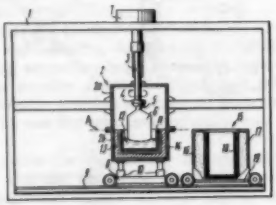
APPARATUS AND METHOD OF GROWING AND DISCHARGING SINGLE CRYSTALS

Vitaly Y. Apilat, ulitsa 23 Avgusta, 55b, kv. 36; Valentin I. Goriletsky, ulitsa 23 Avgusta, 40, kv. 11; Vladimir G. Maximov, ulitsa Derevyanko, 6, kv. 48; Oleg S. Mjulendorf, ulitsa Geroev Truda, 47-b, kv. 242; Alexei V. Radkevich, prospekt Pravdy, 5, kv. 128; Leonid D. Chernitsky, ulitsa Roberta Eidemana, 15, kv. 56; Lev G. Eidelman, prospekt Lenina, 31-b, kv. 70, all of Kharkov, U.S.S.R.; Viktor Y. Vakulenko, deceased, late of Kharkov, and by Raisa P. Vakulenko, administrator, ulitsa Komandarma Uborevicha, 44, kv. 8, Khardov, both of U.S.S.R.

Filed Feb. 24, 1982, Ser. No. 351,973

Int. Cl.³ C30B *15/10, 15/32*

U.S. Cl. 422—249 **4 Claims**



1. Apparatus for growing single crystals from a melt comprising:

a frame,

a furnace chamber comprising a top furnace member and a base furnace member separable along a horizontal jointing plane,

a crucible for said melt arranged in said base furnace member, the upper edge of said crucible being substantially level with the horizontal jointing plane,

heating means surrounding said crucible,

a crystal pull rod extending along a vertical axis through said furnace, said rod being reciprocatable along said axis from an upper position in said top furnace frame to a lower position extending therethrough into said base furnace member,

drive means for reciprocating said rod and for simultaneously rotating said rod about its axis,

a seed-crystal holder mounted on the lower end of said pull-rod for the growth of a single crystal thereon from said melt,

said top furnace member being stationarily fixed to said frame and said base furnace member being movable between a first position in vertical alignment with said top furnace member and a second position offset from alignment with said top furnace member, whereby,

in said first position said pull rod may be manipulated to grow said crystal, and in said second position said pull rod may be manipulated to remove said crystal, while said pull rod, crystal holder and crystal are maintained in the same vertical axis.

4,485,073

PROCESS OF PRODUCING MANGANESE SULFATE SOLUTIONS

Wilbert J. Robertson, Oklahoma City, and Roger C. Shaw, Edmond, both of Okla., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed Feb. 8, 1984, Ser. No. 577,997

Int. Cl.³ C01G *45/10*

U.S. Cl. 423—49 **21 Claims**

1. A process for the preparation of manganese sulfate solutions for use in the manufacture of electrolytic manganese dioxide, said solutions having substantially reduced concentrations of potassium impurity, comprising:

A. blending a reduced manganese ore, an added source of water soluble aluminum ions, a source of water soluble ferric ions and an aqueous acid solution selected from the group consisting of aqueous sulfuric acid and spent aqueous electrolyte containing sulfuric acid to form a digestion mixture having a solution pH ranging from about 0.5 to about 3.5;

B. digesting said mixture at a temperature sufficient to form a mixed reaction product comprising a liquid phase of manganese sulfate solution and a solid phase containing digested ore residue and a particulate complex salt byproduct or mixture of particulate complex salt byproducts and

C. recovering said liquid phase of manganese sulfate solution from said mixed digestion product.

4,485,074

PROCESS FOR THE RECOVERY OF MOLYBDENUM FROM ORGANIC SOLUTIONS

Richard B. Poenisch, Galveston, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 21, 1981, Ser. No. 227,115

Int. Cl.³ C01G *39/00*

U.S. Cl. 423—55 **19 Claims**

1. A process for the recovery of molybdenum from an organic solution derived from the epoxidation of an olefinically unsaturated containing a soluble molybdenum containing organic compound which comprises:

(a) admixing said organic solution with water, in an amount between about 0.5 and 10 percent, based on the weight of the organic solution, to form an admixture of the organic solution and water;

(b) heating said mixture to a temperature in the range of about 150° C. to about 250° C. under pressure sufficient to maintain said admixture in the liquid phase and for a time sufficient to precipitate at least a portion of the molybdenum contained in the organic solution as a solid; and

(c) separating the precipitated molybdenum containing solids from the organic solution.

4,485,075

PROCESS FOR THE EXTRACTION OF ARSENIC FROM AQUEOUS SOLUTIONS CONTAINING ALKALI METAL CARBONATE, SULFATE AND HYDROXIDE OR HYDROGEN CARBONATE AND AT LEAST ON METAL INCLUDING VANADIUM, URANIUM AND MOLYBDENUM

Pierre Maurel, Aix en Provence, France, assignor to Uranium Pechiney Ugine Kuhlmann, Paris, France

PCT No. PCT/FR82/00068, § 371 Date Dec. 7, 1982, § 102(e) Date Dec. 7, 1982, PCT Pub. No. WO82/03620, PCT Pub. Date Oct. 28, 1982

PCT Filed Apr. 8, 1982, Ser. No. 448,854

Claims priority, application France, Apr. 15, 1981, 81 07857

Int. Cl.³ C01G *39/06, 28/00*

U.S. Cl. 423—55 **20 Claims**

1. A process for the extraction of arsenic from aqueous arsenate-containing solutions containing alkali metal carbonate, sulfate and hydroxide, or hydrogen carbonate, at least one

metal selected from the group consisting of vanadium, uranium and molybdenum in the form of alkali metal salts, and inorganic and/or organic impurities, comprising the steps of caustifying said aqueous solution with lime to convert the alkali metal carbonates to hydroxides, and concentrating the solution by evaporation of the liquids obtained from the caustification step to produce a precipitate containing alkali metal sulfate wherein the caustification of said solution is performed in two steps consisting of (a) treating said solution with a quantity of lime approximately equal to, but less than, the stoichiometric amount necessary to convert the alkali metal carbonates to hydroxides; and (b) after separating and washing the first precipitate, treating the liquor formed with at least the stoichiometric amount of lime necessary to precipitate the arsenate in solution and the remaining carbonate ions.

16. The process according to claim 1 wherein the alkali metal hydroxide-enriched liquor, separated from the precipitate containing alkali metal sulfate, is treated by acidification and the addition of an alkali metal sulfide to precipitate molybdenum sulfide.

4,485,076

LIQUID/LIQUID EXTRACTION OF GALLIUM VALUES FROM BASIC AQUEOUS SOLUTIONS THEREOF

Denise Bauer, Le Raincy; Patrick Fourre, Paris, and Jean-Louis Sabot, Maisons Laffitte, all of France, assignors to Rhone-Poulenc Specialites Chemiques, Courbevoie, France

Filed Aug. 26, 1983, Ser. No. 526,809

Claims priority, application France, Aug. 26, 1982, 82 14629

Int. Cl.³ C01G *15/00*

U.S. Cl. 423—112 **20 Claims**

1. A process for recovering gallium values contained in a basic aqueous solution thereof by liquid/liquid extraction, comprising contacting such basic aqueous solution with a water immiscible organic phase which comprises an organic solvent having dissolved therein at least one organic-soluble substituted hydroxyquinoline and at least one organic-soluble organosulfate or organosulfonate compound comprising at least one acid function, either as the free acid or in a salt form thereof, whereby said gallium values are extracted into the organic phase, separating the organic phase from the basic aqueous solution, and recovering the gallium values from the organic phase.

4,485,077

METHOD FOR CONDUCTING WET GRINDING OF PHOSPHATE ROCK IN A PHOSPHORIC ACID PRODUCTION PLANT

John L. Martinez, Brandon, Fla., assignor to The Badger Company, Inc., Cambridge, Mass.

Filed Aug. 12, 1983, Ser. No. 522,390

Int. Cl.³ C01B *25/16*; C01F *1/00*; B02C *1/00*

U.S. Cl. 423—320 **21 Claims**

1. A method for conducting wet grinding of phosphate rock in the production of phosphoric acid by reacting phosphate rock with sulphuric acid comprising the steps of:

(1) wet grinding phosphate rock in fresh water at a first stage so as to form a first slurry comprising ground rock and fresh water:

(2) sending said first slurry from said first stage to a second stage;

(3) dewatering said first slurry at said second stage so as to recover most of the fresh water and leave substantially only wet round rock;

(4) recycling the fresh water recovered at said second stage back to said first stage for use in further wet grinding;

(5) sending said ground rock from said second stage to a third stage;

(6) refluidizing the ground rock at said third stage with an aqueous liquid derived from treating phosphoric acid produced by the wet process methods, so as to form a second slurry; and

(7) thereafter passing said second slurry on to a reactor for reaction with sulphuric acid so as to produce phosphoric acid by the wet process method.

4,485,078

PROCESS FOR PRODUCING WET PROCESS PHOSPHORIC ACID FROM PHOSPHATE ROCKS CONTAINING FLUOCHLORAPATITE AND RELATED MINERALS

Charles W. Weston, Prairieville; John W. Wen, and Frederick S. Mandel, both of Baton Rouge, all of La., assignors to Agrico Chemical Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 358,613, Mar. 16, 1982, abandoned. This application Mar. 8, 1983, Ser. No. 471,421

Int. Cl.³ C01B *25/16*

U.S. Cl. 423—320 **50 Claims**

1. A process for producing phosphoric acid from phosphate rock containing fluochlorapatite, comprising the steps of:

(a) crushing the phosphate rock to a size such that from about 50% to about 90% by weight thereof will pass a −200 mesh U.S.S. sieve;

(b) mixing the rock crushed in step (a) with sulfuric acid and recycled phosphoric acid to form a slurry;

(c) adding a reductant to the digestor slurry formed in step (b) to maintain the oxidation-reduction potential of said slurry in the range from about +150 mv to about +750 mv; and

(d) filtering the resulting slurry of step (c) to remove gypsum by-products therefrom to obtain a phosphoric acid.

4,485,079

AMMOXIDATION OF METHANOL TO PRODUCE HYDROGEN CYANIDE

James F. Brazdil, Jr., Lyndhurst; Thomas G. Attig, Aurora, and Robert K. Grasselli, Chagrin Falls, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 332,060, Dec. 18, 1981, abandoned. This application Jun. 6, 1983, Ser. No. 501,671

Int. Cl.³ C01C *3/02*; C07C *120/14*

U.S. Cl. 423—376 **13 Claims**

1. A process for ammoxidizing a reactant selected from the group consisting of methanol, formaldehyde and dimethyl ether to produce HCN, said process comprising contacting said reactant, ammonia and oxygen at a temperature of 200° to 600° C. in the vapor phase with an iron and phosphorus free oxide complex catalyst of the formula:

$$R_rA_aBi_bCe_cW_dV_eMo_fO_x$$

wherein

A is alkali metal, Tl, Sm, Ag, Cu or mixtures thereof, and

R is Cr and/or Sb,

wherein

a is 0.01 to 2,

b is 1 to 11,

c is 1 to 11,

r is 0 to 5,

$0 \leq d+e \leq f$,

$d+e+f=12$ to 12.5,

$$\frac{1}{2} \leq \frac{b+c}{f+d+e} \leq \frac{5}{6},$$

and

x is a number sufficient so that the valence requirements of the other elements present are satisfied.

4,485,080

PROCESS FOR THE PRODUCTION OF DIAMOND POWDER

Hideo Shingu; Keiichi Ishihara, both of Kyoto; Akira Doi, Itami, and Naoji Fujimori, Itami, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 12, 1983, Ser. No. 560,403
Claims priority, application Japan, Dec. 13, 1982, 57-218980
Int. Cl.³ C01B *31/06*
U.S. Cl. 423—446 11 Claims

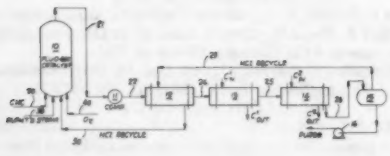
1. A process for the production of diamond powder, which process comprises (A) a step of melting carbon and at least one metal capable of containing carbon as a solid solution to form a liquid, (B) a step of subjecting the liquid to rapid solidification to form an amorphous metal or alloy, (C) a step of heating the amorphous metal or alloy at a predetermined temperature to precipitate diamond from the amorphous metal or alloy and (D) a step of separating the phase of the amorphous metal or alloy other than the diamond to obtain diamond powder.

4,485,081

HYDROGEN CHLORIDE RECOVERY PROCESS

Angelo J. Magistro, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Feb. 28, 1983, Ser. No. 470,349
Int. Cl.³ C01B *7/01*
U.S. Cl. 423—481 11 Claims



1. A process for oxidizing a chlorinated hydrocarbon material mainly to carbon dioxide, hydrogen chloride and water, comprising,

(a) contacting, in a catoxid reactor, said material and a gaseous mixture of hydrogen chloride, steam and oxygen essentially free of nitrogen, with an alumina catalyst containing at least iron and copper or compounds thereof,

(b) controlling the flow of said mixture so as to provide

(i) from 1.5 to about 6 equivalents of steam for each equivalent of steam generated in situ by oxidation of said material,

(ii) an excess of oxygen in the range from about 5 to about 30 percent over that stoichiometrically required to oxidize said material, and

(iii) enough HCl gas to fluidize said catalyst,

so as to provide a ratio of the gaseous feed components, namely chlorinated hydrocarbons:oxygen:hydrogen chloride:steam in the range from about 1:3:3:9 to about 1:5:6:6, and,

(c) operating said reactor with said catalyst in a fluidized sate at a temperature in the range from about 400° C. to about 600° C. and at a pressure in the range from about 10 psig to about 100 psig,

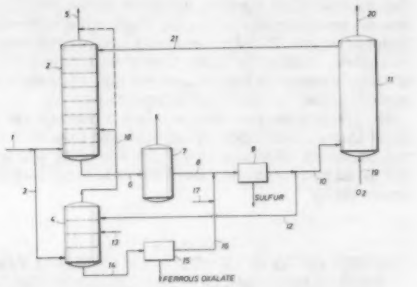
whereby at least 95 percent on a molar basis of said material is oxidized.

4,485,082

REMOVAL OF OXALATE ION FROM GAS TREATING SOLUTIONS

George C. Blytas, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 25, 1983, Ser. No. 545,305
Int. Cl.³ C01B *17/05;* B01D *53/34*
U.S. Cl. 423—573 R 6 Claims



1. A process for the removal of H_2S from a sour gaseous stream comprising

(a) dividing the sour gaseous stream into a major portion and a minor portion comprising from about 0.01 percent by volume to about 30 percent by volume of the total sour gaseous stream;

(b) contacting the major portion in a first contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the mixture comprising an effective amount of oxidizing reactant selected from the group consisting of oxidizing polyvalent metal chelates of nitrilotriacetic acid, and mixtures thereof, to produce a sweet gas stream and an aqueous admixture containing sulfur and reduced reactant;

(c) removing aqueous admixture from the contacting zone, and removing solid sulfur from said aqueous admixture;

(d) regenerating said aqueous admixture, producing a regenerated oxidizing reactant solution, and returning regenerated oxidizing reactant solution to the contacting zone;

(e) removing a bleed stream containing a composition selected from polyvalent metal chelates of nitrilotriacetic acid, and mixtures thereof, and containing decomposition products of said composition including oxalate ion, from one or more loci in or between steps b, c or d;

(f) contacting said bleed stream with said minor portion in a second contacting zone to reduce the H_2S concentration in said gaseous stream, and producing hydrogen ions and sulfur in said bleed stream, concomitantly or subsequently adding a composition capable of providing hydrogen ions in said solution under conditions and in an amount sufficient to precipitate ferrous oxalate, but not remove the bulk of the polyvalent metal chelate or chelates in the bleed stream, and precipitating ferrous oxalate and separating precipitated solid from the bleed stream.

4,485,083

PROCESS FOR THE REMOVAL OF OXALATE ION FROM GAS TREATING SOLUTIONS

George C. Blytas, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 25, 1983, Ser. No. 545,306
Int. Cl.³ C01B *17/05;* B01D *53/34*
U.S. Cl. 423—573 R 12 Claims

5. A process for the removal of H_2S from a sour gaseous stream comprising:

(a) contacting the sour gaseous stream in a contacting zone with an aqueous reaction solution at a temperature below

the melting point of sulfur, the mixture comprising an effective amount of an oxidizing reactant selected from the group consisting of oxidizing polyvalent metal chelates of nitrilotriacetic acid, and mixtures thereof, to produce a sweet gas stream and an aqueous admixture containing sulfur and reduced reactant;

(b) removing aqueous admixture from the contacting zone, and removing solid sulfur from said aqueous admixture;

(c) regenerating said aqueous admixture, producing a regenerated oxidizing reactant solution, and returning regenerated oxidizing reactant solution to the contacting zone;

(d) removing a bleed stream containing a composition selected from polyvalent metal chelates of nitrilotriacetic acid, and mixtures thereof, and containing decomposition products of said composition, including oxalate ion, from one or more loci in or between steps a, b, or c;

(e) contacting said bleed stream with a sufficient amount of a composition capable of providing hydrogen ions in solution to precipitate ferrous oxalate, under conditions to precipitate ferrous oxalate, but not remove the bulk of the polyvalent metal chelate or chelates in the bleed stream, and precipitating ferrous oxalate and separating precipitated solid from the bleed stream.

4,485,084

HYDROGEN PEROXIDE PROCESS

William A. McIntyre, LaPorte, Tex., assignor to FMC Corporation, Philadelphia, Pa.

Filed Feb. 24, 1984, Ser. No. 583,460
Int. Cl.³ C01B *15/02*
U.S. Cl. 423—588 **22 Claims**

1. In the process of manufacturing hydrogen peroxide including the steps of reducing, oxidizing, and extracting a working compound selected from the group consisting of a substituted anthraquinone, the equivalent 5,6,7,8-tetrahydroanthraquinone, the anthrahydroquinone derivatives and mixtures thereof, the working compound being dissolved in an inert solvent to comprise a working solution, said oxidizing step comprising contacting the working solution from the reducing step with a gas containing oxygen at a pressure of at least 275 kilopascals thereby converting at least part of the hydroquinone form of the working compound to hydrogen peroxide and the corresponding anthraquinone form of the working compound, the improvement which comprises recovering solvent from effluent gas from said oxidizing step by:

(a) adjusting the energy content of the effluent gas so that the temperature after step (b) is greater than the temperature at which ice crystals can be formed,

(b) converting part of the energy content of the effluent gas from the oxidizing step into mechanical energy by causing the effluent gas to expand and be reduced in temperature below the dewpoint of the solvent thereby condensing solvent, and

(c) collecting the condensed solvent.

4,485,085

PROCESS FOR PRODUCING FERRIMAGNETIC SPINEL FIBERS

Lawrence D. David, Florham Park, and Richard M. Arons, Chatham, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 21, 1983, Ser. No. 487,400
Int. Cl.³ C01G *49/00, 51/00, 53/00*
U.S. Cl. 423—594 **14 Claims**

1. A process for the production of ferrimagnetic spinel fibers which comprises (1) forming an aqueous solution containing metal salt compounds in quantities and with metal valences that subsequently yield a spinel product corresponding to the formula:

$$M_1Fe_2O_4$$

where M is manganese, iron, cobalt, nickel, copper, zinc, cadmium, magnesium, barium, strontium, or any combination thereof; (2) contacting the aqueous solution with organic polymer fibers that swell and are imbibed with the metal salts; (3) contacting the imbibed fibers with an alkaline aqueous solution to precipitate the metal salt content of the fibers in the form of metal hydroxides; and (4) pyrolyzing the fibers at a temperature between about 500°–2500° C. in the presence of molecular oxygen to form ferrimagnetic $M_1Fe_2O_4$ spinel fibers.

4,485,086

RADIOLABELED TUMOR IMAGING AGENT AND METHOD OF PREPARATION

Dennis W. Wong, 2853 Sunnydlen Rd., Torrance, Calif. 90505

Filed Apr. 11, 1983, Ser. No. 483,819
Int. Cl.³ A61K *43/00, 49/00*
U.S. Cl. 424—1.1 **32 Claims**

13. A method of labeling hematoporphyrin derivative (HPD) with ^{111}In at physiologic pH 7–8 condition based on the bicarbonate reaction with $^{111}InCl_3$ producing a diagnostic composition suitable for radiologic imaging of neoplasms in man or in animal comprising the sequential steps of:

(a) converting $^{111}InCl_3$ to ^{111}In-bicarbonate by neutralizing 0.5–5 ml(1–10 mCi) $^{111}InCl_3$ solution to pH 7.4 with a sufficient amount of a 7.5% sodium bicarbonate solution and mixing the admixture for 1–5 minutes;

(b) adding 0.5–1 ml(5–10 mg) HPD solution to the neutralized radioactive solution of step (a) and mixing it for 1–5 minutes;

(c) heating the radioactive admixture of step (b) at 110°–120° C. for 15 minutes and allowing it to cool to room temperature for 10–30 minutes.

4,485,087

PROCESS FOR OBTAINING COMPOSITE PHARMACEUTICAL PREPARATION

Saburo Otsuka; Yuusuke Ito; Toshiyuki Yoshikawa, and Shoichi Tokuda, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 12, 1982, Ser. No. 357,540
Claims priority, application Japan, Mar. 13, 1981, 56-37016
Int. Cl.³ A61L *15/03;* A61F *13/00;* A61K *9/70*
U.S. Cl. 424—28 **18 Claims**

1. A process for obtaining a composite pharmaceutical preparation which comprises coating or laminating a composition comprising

(a) an adhesive substance having a pressure-sensitive adhesive property at room temperature, and

(b) a percutaneous absorption type medicine which is solid at 0° C.

onto a polymer film capable of allowing the medicine in contact therewith to migrate through the polymer film, the composition being prepared by adding the medicine to the adhesive substance in a higher concentration than the solubility thereof in the adhesive substance, whereupon excess medicine above the solubility limit in the adhesive substance migrates into the polymer film before crystallization of the medicine so that during use medicine in the adhesive substance is gradually adsorbed through the skin and the medicine and the polymer film is supplied to the adhesive substance in an amount corresponding to the decrease due to the adsorption of the medicine through the skin.

4,485,088

METHOD OF TREATMENT OF FIBROTIC LESIONS BY TOPICAL ADMINISTRATION OF LATHYROGENIC DRUGS

Milos Chvapil, Tucson, Ariz., assignor to Bio-Products, Inc., Tucson, Ariz.

Filed Mar. 26, 1982, Ser. No. 362,241
Int. Cl.[3] A61K 9/70, 31/275
U.S. Cl. 424—28 5 Claims

1. A method of treating a wound to reduce the extent of collagen crosslinking at the wound site, comprising

preparing a drug preparation containing beta-aminopropionitrile in a drug carrier, and

applying a therapeutically effective amount of the drug preparation locally to the wound site.

4,485,089

GEL TOOTHPASTES

Dianne P. Leipold, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Oct. 17, 1983, Ser. No. 542,911
Int. Cl.[3] A61K 7/16
U.S. Cl. 424—49 10 Claims

1. A transpartent dentifrice composition consisting essentially of:

(a) a mixture containing from about 80% to about 90% of a humectant and from about 10% to about 20% of a suitable vehicle for the humectant;

(b) from about 5% to about 50% of a finely divided dental abrasive;

(c) from about 1% to about 10% of a silica thickener; and

(d) from about 0.1% to about 0.4% of a hydrophobically modified hydroxyethyl cellulose which is hydrophobically modified with a hydrocarbon radical having 8 to 25 carbon atoms and which has a hydroxyethyl M.S. of from about 2.5 to about 3.5.

4,485,090

COMPOSITION AND METHOD FOR REDUCING ELUTION OF THERAPEUTIC AGENTS FROM TEETH

Robert W. H. Chang, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 303,206, Sep. 18, 1981, Pat. No. 4,366,146, which is a division of Ser. No. 176,680, Aug. 11, 1980, Pat. No. 4,304,766, which is a division of Ser. No. 026,402, Apr. 2, 1979, Pat. No. 4,243,658, which is a continuation-in-part of Ser. No. 865,681, Dec. 29, 1977, abandoned. This application Sep. 27, 1982, Ser. No. 425,103
Int. Cl.[3] A61K 7/16
U.S. Cl. 424—52 6 Claims

6. A method of substantially reducing elution of a therapeutic agent previously applied to teeth which comprises the steps of

applying said therapeutic agent to teeth, and

applying a dentifrice composition to said treated teeth, wherein said dentifrice composition comprises (1) at least one ingredient selected from the group consisting of therapeutic agents, polishing agents, surfactants, flavoring agents, sweetening agents, thickening agents and humectants that are substantially free from polyvalent metal atoms, and (2) at least 0.05% by weight of an anionic, polymeric, water-dispersible, membrane-forming material which, when applied to the surface of the teeth in an oral environment complexes with the calcium of said teeth and forms a substantially continuous hydrophobic barrier thereon which substantially reduces the elution of said previously applied therapeutic agent from said teeth, and which, when at equilibrium with the complex has a formation constant in the range of about 0.5 to 8, said membrane forming material being a polymeric material having a polyolefin main chain with acidic functionalities pendant therefrom.

4,485,091

DERMATOLOGICAL COMPOSITIONS

Harry Fitton, Oldham, England, assignor to Quinoderm Limited, Oldham, England

Continuation of Ser. No. 169,494, Jul. 15, 1980, abandoned, which is a continuation-in-part of Ser. No. 2,891, Jan. 12, 1979, abandoned. This application Jul. 12, 1982, Ser. No. 397,416
Int. Cl.[3] A61K 7/135, 37/40, 31/47, 31/155
U.S. Cl. 424—62 11 Claims

1. A method of preparing a dermatological composition in the form of a cream preparation, said composition having an oil medium dispersed in an aqueous medium, and incorporating starch gel, said aqueous medium containing hydrogen peroxide and a buffer to maintain the pH of the composition at less than 7, comprising the steps of:

i. forming a mixture of that part of said aqueous medium not including said hydrogen peroxide, and said oil medium and starch;

ii. stirring and heating said mixture so that said starch is converted to said starch gel in situ thereby forming a stable, smooth oil-in-water emulsion;

iii. cooling said emulsion;

iv. adding the remainder of said aqueous medium including said hydrogen peroxide to said cooled emulsion and stirring to give a uniform mixture.

4,485,092

TALC COMPOSITIONS

William H. Ashton, Philadelphia, Pa.; Robert S. Russell, South River, and David C. Zajac, East Brunswick, both of N.J., assignors to Johnson & Johnson Baby Products Company, N.J.

Filed Aug. 3, 1983, Ser. No. 519,871
Int. Cl.[3] A61K 7/035, 49/00
U.S. Cl. 424—69 4 Claims

1. A body powder composition comprising from about 99 to 80% by weight of the total composition talc and from about 1 to 20% by weight of the total composition pregelatinized cornstarch.

4,485,093

IMMUNOTOXIN CONJUGATE WHICH COMPRISES ARSANILIC ACID, USEFUL FOR TREATING MALIGNANT TUMORS, PARTICULARLY PANCREATIC CANCER

Richard G. Runge, 6311 S. 149th St., Omaha, Nebr. 68137

Filed Aug. 13, 1982, Ser. No. 408,041
Int. Cl.[3] A61K 39/00, 45/02; A23J 0/00; C07G 7/00
U.S. Cl. 424—85 8 Claims

1. A water soluble immunotoxin conjugate consisting of arsanilic acid, polyglutamic acid, and a tumor specific antibody wherein: (1) polyglutamic acid having a molecular weight from about 2,000 to about 35,000 covalently binds the antibody and the arsanilic acid via carboxyl groups on the polyglutamic acid: and (2) the arsanilic acid is present in a tumor toxic amount.

4,485,094

METHOD OF MAKING ABO_3 OF THE CUBIC PEROVSKITE STRUCTURE

Alfred R. Pebler, Penn Hills, and Robert G. Charles, Hampton Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 28, 1983, Ser. No. 461,800
Int. Cl.[3] B05D 3/02, 5/12; H01M 6/30
U.S. Cl. 427—87 19 Claims

1. A method of making a continuous film of mixed oxide of at least two metals comprising:

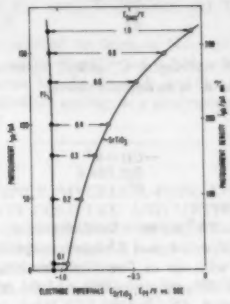
(A) preparing a solution which comprises:

(1) an alkoxide source of one of said metals;

(2) a chelate source of a second of said metals; and

(3) sufficient solvent to solubilize the sources of said metals in said mixed oxide;

(B) adding to said solution about 1 to about 2 moles of water per mole of said mixed oxide;



(C) applying said solution to the surface of a substrate to form a coating on said substrate; and

(D) heating said solution to at least about 500° C. to evaporate said solvent and produce said mixed oxide.

4,485,095

PRONASE USED FOR THE TREATMENT OF DISEASES OF THE LIVER AND KIDNEYS IN HUMANS AND ANIMALS

Shigemi Fujisaki, Nishinomiya, and Mitsuaki Mitani, Sagamihara, both of Japan, assignors to Kaken Pharmaceutical Co., Ltd., Japan

Filed Aug. 6, 1982, Ser. No. 405,770

Claims priority, application Japan, Aug. 10, 1981, 56-125002

Int. Cl.³ A61K *37/48*

U.S. Cl. 424—94 **3 Claims**

1. A method of treating chronic hepatitis, chronic glomerulonephritis and nephrotic syndromes in humans and animals which comprises administering to a human or animal in need thereof, a therapeutically effective amount of pronase in combination with a pharmaceutically acceptable carrier.

4,485,096

TISSUE-EQUIVALENT AND METHOD FOR PREPARATION THEREOF

Eugene Bell, Dedham, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 352,586, Feb. 26, 1982, abandoned, which is a continuation-in-part of Ser. No. 245,536, Mar. 19, 1981, abandoned, which is a continuation-in-part of Ser. No. 972,832, Dec. 26, 1978, abandoned. This application May 26, 1982, Ser. No. 381,978

Int. Cl.³ A61K *35/12, 35/36*

U.S. Cl. 424—95 **29 Claims**

1. A method of producing a tissue-equivalent, comprising:

a. combining a collagen solution with a contractile agent under conditions to form a gel mixture having said contractile agent dispersed within said gel mixture; and then

b. maintaining the gel mixture prepared in step (a) under conditions which permit the contraction of said gel mixture to form a tissue-equivalent.

10. A method of preparing a living tissue-equivalent, comprising:

a. forming an acidic solution of collagen;

b. combining contractile cells and nutrient medium with said acidic solution of collagen;

c. raising the pH of said solution of collagen to a level sufficient to precipitate collagen fibrils into a hydrated collagen lattice containing said contractile cells; and

d. maintaining said lattice and said contractile cells under conditions sufficient for said cells to contract said collagen lattice thereby forming a living tissue-equivalent.

4,485,097

BONE-EQUIVALENT AND METHOD FOR PREPARATION THEREOF

Eugene Bell, Dedham, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 381,978, May 26, 1982, , which is a continuation-in-part of Ser. No. 352,586, Feb. 26, 1982, abandoned, which is a continuation-in-part of Ser. No. 245,536, Mar. 19, 1981, abandoned, which is a continuation-in-part of Ser. No. 972,832, Dec. 26, 1978, abandoned. This application May 25, 1983, Ser. No. 497,984

Int. Cl.³ A61K *35/32*

U.S. Cl. 424—95 **3 Claims**

1. A bone-equivalent comprising a hydrated collagen lattice containing deminerlized bone powder and contracted with fibroblast cells.

2. A method of forming a bone-equivalent, comprising:

a. combining a collagen solution with demineralized bone powder and fibroblast cells under conditions to form a gel mixture having demineralized bone powder and fibroblast cells dispersed within said gel mixture;

b. maintaining the gel mixture prepared in step (a) under conditions which permit the contraction of said gel mixture to form a bone-equivalent.

4,485,098

METHOD FOR PROMOTING HEALING OF WOUND AND LOWERING BLOOD LEVEL OF CREATINE PHOSPHOKINASE

Kunitoshi Sekimoto, Sagamihara; Yoneji Mamiya, Hiratuka, and Tadashi Ishikawa, Sagamihara, all of Japan, assignors to Nihon Nosan Kogyo K.K., Yokohama, Japan

Filed Dec. 13, 1983, Ser. No. 561,059

Claims priority, application Japan, Dec. 22, 1982, 57-223692

Int. Cl.³ A61K *35/54*

U.S. Cl. 424—105 **9 Claims**

1. A method for promoting healing of wounds on the human body and for lowering the amount of creatine phosphokinase in the blood during periods of muscular exercise, which comprises giving a person iodine-enriched egg in an amount effective for promoting healing of the wounds or lowering the amount of creatine phosphokinase in the blood during periods of muscular exercise.

4,485,099

RENIN INHIBITORS CONTAINING A C-TERMINAL AMIDE CYCLE

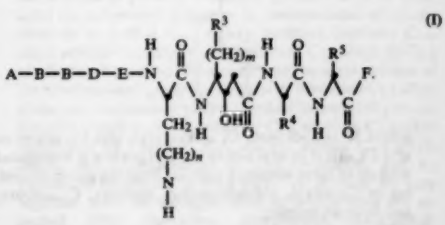
Joshua A. Boger, Bryn Mawr, and Daniel F. Veber, Ambler, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 15, 1983, Ser. No. 504,768

Int. Cl.³ A61K *37/00*; C07C *103/52*

U.S. Cl. 424—177 **8 Claims**

1. A peptide of the formula:

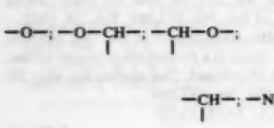


(I)

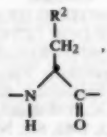
wherein:

A is hydrogen; or

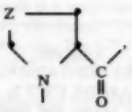
where
X is



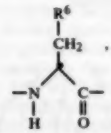
and
R_a^1 and R_b^1 may be the same or different and are hydrogen; $Y-(CH_2)_{p'}-$ or $Y-(CH_2)_{p'}-CH=CH-(CH_2)_{p''}$, where Y is C_{1-4} alkyl; hydrogen; aryl; C_{3-7}cycloalkyl; or C_{3-7}cycloalkyl or aryl substituted with up to five members independently selected from the group consisting of C_{1-4}alkyl, trifluoromethyl, hydroxy, C_{1-4}alkoxy, and halo;
p is 0 to 5; and p' and p'' are independently 0 to 2; except that where X is —O—, only one of R_a^1 or R_b^1 is present;
B is absent; glycyl; sarcosyl; or



where R^2 is hydrogen; C_{1-4} alkyl; hydroxy C_{1-4} alkyl; aryl; aryl substituted with up to three members selected from the group consisting of C_{1-4}alkyl, trifluoromethyl, hydroxy, C_{1-4}alkoxy, and; halo, indolyl; 4-imidazolyl; amino C_{2-4} alkyl; guanidyl C_{2-3} alkyl; or methylthiomethyl;
D is absent; or



where Z is $-(CH_2)_l-$ and l is 1 or 2; or —S—;
E is absent; or



where R^6 is hydrogen; C_{1-4}alkyl; aryl; aryl C_{1-4}alkyl; or aryl C_{1-4}alkyl or aryl where the aryl portion is substituted with up to three members selected from the group consisting of C_{1-4}alkyl, trifluoromethyl, hydroxy, C_{1-4}alkoxy, and halo; or indolyl;
F is absent; or glycyl;
R^3 is C_{3-6} alkyl; C_{3-7} cycloalkyl; aryl; or C_{3-7}cycloalkyl or aryl substituted with up to three members selected from the group consisting of C_{1-4}alkyl, trifluoromethyl, hydroxy, C_{1-4}alkoxy, and halo;
R^4 is hydrogen, or

where R^7 is hydrogen; C_{1-4}alkyl; hydroxy; or C_{3-7}cycloalkyl; and R^6 is as defined above;
R^5 is hydrogen;

where R^6 and R^7 are as defined above; or $-(CH_2)_q-R^8$, where q is 0 or 1–4; and R^8 is heterocyclic; heterocyclic substituted with up to five members independently selected from the group consisting of C_{1-6}alkyl, hydroxy, trifluoromethyl, C_{1-4}alkoxy, halo, aryl, aryl C_{1-4}alkyl, amino, and mono- or di-C_{1-4}alkylamino; guanidyl C_{2-3}alkyl; or amino C_{1-4}alkyl;
Wherein said heterocyclic moiety is selected from pyrryl, pyrrolinyl, pyrrolidinyl, pyrazolyl, pyrazolinyl, pyrazolidinyl, imidazolyl, imidazolinyl, imidazolidinyl, pyridyl, piperidinyl, pyrazinyl, piperazinyl, pyrimidinyl, pyridazinyl, oxazolyl, oxazolidinyl, isoxazolyl, isoxazolidinyl, morpholinyl, thiazolyl, thiazolidinyl, isothiazolyl, isothiazolidinyl, indolyl, quinolinyl, isoquinolinyl, benzimidazolyl, benzothiazolyl, benzoxazolyl, furyl, thienyl and benzothienyl,
m is 1 to 4;
n is 0 to 4; and
wherein all of the asymmetric carbon atoms have an S configuration, except for those in the A, B and D substituents, which may have an S or R configuration; and a pharmaceutically acceptable salt thereof.

4,485,100

ELASTASE INHIBITORS, A PROCESS FOR THEIR PREPARATION AND MEDICAMENTS CONTAINING THESE INHIBITORS

Karl Hochstrasser, Seefeld-Oberalting, and Elmar Wachter, Munich, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 22, 1983, Ser. No. 514,033

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1982, 3230275

Int. Cl.[3] **A61K** *37/00*; **C07C** *103/52*

U.S. Cl. 424—177 **9 Claims**

1. An elastase inhibitor of the formula I

(I)

Lys—Ala—Asp—Ser—Cys—Gln—Leu—Asp—Tyr—Ser—
—Gln—Gly—
Pro—Cys—Leu—Gly—Leu—Phe—Lys—Arg—Tyr—Phe—
—Tyr—

X
|
Asn—Gly—Thr—Ser—Met—Ala—Cys—Glu—Thr—Phe—
—Leu—Tyr—Gly—
Gly—Cys—Met—Gly—Asn—Leu—Asn—Phe—Leu—
—Ser—Gln—Lys—
Glu—Cys—Leu—Glu—Thr—Cys—Arg,

in which
X represents hydrogen or a glycoside residue built-up from residues of N-acetylneuraminic acid, N-acetylglucosamine, glactose and mannose.

4,485,101
PEPTIDES

David H. Coy, and William A. Murphy, both of New Orleans, La., assignors to Administrators of the Tulane Educational Fund, New Orleans, La.

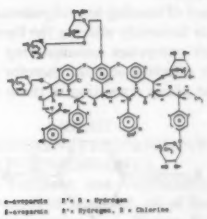
Filed Oct. 11, 1983, Ser. No. 540,380
Int. Cl.³ A61K *37/00*; C07C *103/52*
U.S. Cl. 424—177 12 Claims

1. A dodecapeptide of the formula: N-acetyl-Cys-Lys-Asn-A-Phe-D-Trp-Lys-Thr-Phe-Thr-Ser-B-NH_2 wherein A is Phe or 4-X-Phe wherein X is Cl, Br, or F, and B is Cys or D-Cys; its cyclic 1–12 disulfide analog; or a pharmaceutically acceptable salt thereof.

4,485,102
HIGH POTENCY, MYCELIAL-FREE AVOPARCIN ALKYL SULFATE COMPLEX, AND METHOD FOR THE PREPARATION THEREOF

Jack P. Waite, Fareham, England, assignor to American Cyanamid Company, Stamford, Conn.

Filed Aug. 16, 1982, Ser. No. 408,369
Int. Cl.³ A61K *31/71*
U.S. Cl. 424—181 3 Claims



α-avoparcin R¹ = R = Hydrogen
β-avoparcin R¹ = Hydrogen, R = Chlorine

1. A process for the preparation of a high potency, mycelial-free antibiotic avoparcin, BM123, BM123 gamma, gentamycin streptomycin or neomycin alkyl sulfate complex essentially free of dark colored organic derivatives formed during antibiotic fermentation, comprising the steps of:

(a) producing a fermentation liquor or acidifying the whole harvest mash to a pH of from 1.9 to 2.3 with a pharmacologically acceptable acid and filtering the acidified mash to obtain the acid filtrate substantially free of mycelia and fermentation insolubles;

(b) adding to the mycelial-free acid filtrate from 5 to 50 grams per liter of filtrate of a highly absorbent, finely divided, inorganic solid absorbing agent of a magnesium-silica composition in which the SiO_2 to MgO ratio is between 2.2:1 and 6.5:1 or activated carbon which is selective for the adsorption of dark colored organic derivatives formed during antibiotic fermentation;

(c) agitating the thus formed mixture for from 15 to 45 minutes and separating the adsorbent solids and dark colored organic derivatives from the antibiotic containing acid filtrate;

(d) adding to the acidified filtrate, from which the adsorbent solids and dark colored organic derivatives have been removed, 0.5 to 1.5 grams of a complexing agent of compounds of the formula: $CH_3—(CH_2)_n—O—SO_2—OM$ wherein n is an integer from 9 to 17, inclusive, and M is sodium or potassium, or mixtures thereof per gram of antibiotic activity measured in the filtrate;

(e) concentrating the solids in the alkali metal alkyl sulfate-treated acidified liquor and separating the spent liquor from the solids which contain the antibiotic alkyl sulfate complex;

(f) treating the antibiotic containing solids with aqueous ammonia to adjust the pH thereof to between 6.5 and 9.0 and thereafter drying the resulting mixture to recover the high potency mycelial-free, antibiotic alkyl sulfate complex, essentially free of dark colored organic derivatives formed during antibiotic fermentation.

4,485,103
CONTROLLED RELEASE ACRYLIC POLYMER COATED GRANULAR PESTICIDAL COMPOSITIONS WITH ATTENDANT REDUCED DERMAL TOXICITY

Nunzio R. Pasarela, Bridgewater, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 174,951, Aug. 4, 1980, Pat. No. 4,343,790, which is a continuation of Ser. No. 9,883, Feb. 6, 1979, abandoned. This application Jun. 7, 1982, Ser. No. 385,428
Int. Cl.³ A01N *57/00, 57/16*
U.S. Cl. 424—202 4 Claims

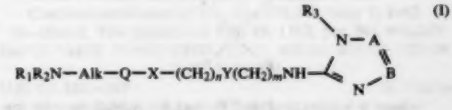
1. A solid particulate composition comprising particles of an inert sorptive or non-sorptive carrier impregnated or coated with a pesticidally effective amount of a phosphorus pesticide which is 2-(diethoxyphosphinylimino)-1,3-dithiolane, 2-(diethoxyphosphinylimino)-4-methyl-1,3-dithiolane or 2-(diethoxyphosphinylimino)-1,3-diethietane and wherein the impregnated or coated carrier is coated with a finely divided sorptive substrate and an acrylic polymer selected from the group consisting of a (1) hard, thermoplastic acrylic polymer having an intrinsic viscosity of from 0.75 dl/g to 3.1 dl/g at 30° C. in tetrahydrofuran, (2) hard, self-crosslinking thermoplastic acrylic polymers having an intrinsic viscosity of from 1.0 dl/g to 2.0 dl/g at 30° C. in dimethylformamide and (3) acrylic polymers having an intrinsic viscosity of from 0.05 dl/g to 0.1 dl/g at 30° C. in butanol, wherein the thus-obtained composition is characterized by decreased mammalian dermal toxicity and sustained pesticidal activity.

4,485,104
1,2,4-TRIAZOLE-3-AMINES AND THEIR PHARMACEUTICAL USE

John W. Clitherow; Barry J. Price; Roger Hayes, and David E. Bays, all of Hertfordshire, England, assignors to Glaxo Group Limited, London, England

Filed Feb. 24, 1983, Ser. No. 469,231
Claims priority, application United Kingdom, Feb. 24, 1982, 8205431
Int. Cl.³ A61K *31/41*; C07D *403/12, 403/14*
U.S. Cl. 424—246 8 Claims

1. A compound of formula (I)



(I)

or a physiologically acceptable salt or hydrate thereof, in which

R_1 represents hydrogen, C_{1-14} alkyl, C_{3-8} cycloalkyl, C_{3-6} alkenyl, ar C_{1-6} alkyl, wherein the ar portion is phenyl or phenyl substituted with one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms; heteroarylalkyl, wherein the heteroaryl portion is thienyl, pyridyl, furyl or thiazolyl the heteroaryl ring may be unsubstituted or substituted by C_{1-3} alkyl, C_{1-3} alkoxy, hydroxy, hydroxy C_{1-6} alkyl, amino C_{1-6} alkyl, C_{1-6} alkylamino C_{1-6} alkyl, di-C_{1-6} alkylamino-C_{1-6} alkyl or halogen, and the alkyl portion of the heteroaralkyl group is a straight or branched C_{1-4} alkyl chain, and the heteroaryl ring is linked to the alkyl portion through a carbon atom; trifluoro C_{1-6} alkyl or C_{1-6} alkyl substituted by hydroxy, C_{1-6} alkoxy, amino, C_{1-6} alkylamino, di-C_{1-6} alkylamino or C_{3-8} cycloalkyl; and R_2 represents hydrogen or C_{1-4} alkyl; or R_1 and R_2 may together with the nitrogen atom to which they are attached form piperidino, morpholino, 4-C_{1-6}alkylpiperidino, pyrrolidino, hexamethyleneiminoor tetrahydropyridino;

Alk represents a straight or branched alkylene chain of 1 to 3 carbon atoms,

Q represents a furan or thiophene ring in which incorporation into the rest of the molecule is through bonds at the 2- and 5-positions, the furan or thiophene ring optionally bearing a further substituent R_4 adjacent to the group R_1R_2N-Alk-; or Q represents a thiophene ring in which incorporation into the rest of the molecule is through bonds at the 2- and 4-positions, the thiophene ring optionally bearing a further substituent R_4 adjacent to the group R_1R_2NAlk with the proviso that when the group R_1R_2NAlk is in the 4-position then the group R_4 is in the 5-position; or Q represents a benzene ring in which incorporation into the rest of the molecule is through bonds at the 1- and 3- or 1- and 4-positions;

R_4 represents halogen or C_{1-4} alkyl which may be substituted by hydroxy or C_{1-4} alkoxy;

X represents oxygen, sulphur, —NH—, methylene or a bond;

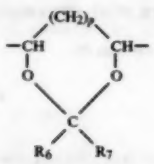
Y represents oxygen, sulphur, methylene or a bond;

n represents zero, 1, 2 or 3, and m is an integer from 2 to 5, with the provisos that (a) the total number of atoms in the chain $X(CH_2)_nY(CH_2)_m$ is an integer from 3 to 8, (b) when X and Y represent oxygen or sulphur then n is 2 or 3, (c) when X represents —NH— then Q is a benzene ring and Y represents methylene or a bond, and (d) when Q represents a benzene ring, X represents oxygen, and n represents 1, then m may additionally represent 1 and Y may additionally represent —$CHOR_{14}$ where R_{14} represents hydrogen, aroyl, ar C_{2-7} alkanoyl or C_{1-6} alkanoyl, wherein the ar portion is as defined above; and

R_3 represents hydrogen, C_{1-6} alkyl, C_{3-6} alkenyl, ar C_{1-6} alkyl, wherein the ar portion is as defined above, or C_{2-6} alkyl substituted by hydroxy or C_{1-6} alkoxy;

either A represents N and B represents CR_5; or A represents CR_5 and B represents N; and R_5 represents

(i) a C_{2-6} straight or branched alkyl group substituted by two or three hydroxyl, C_{1-6} alkoxy or acyloxy groups where the acyl portion is aroyl, ar C_{2-7} alkanoyl or C_{1-6} alkanoyl, wherein ar is as defined above, or the dihydroxyalkyl group may form a cyclic acetal or cyclic ketal structure of the formula



where p is zero or 1 and R_6 and R_7, which may be the same or different, each represents hydrogen, a C_{1-4} alkyl group or a phenyl group; or

(ii) the group $(CH_2)_qZ(CH_2)_rR_8$, where q represents an integer from 1 to 4 inclusive, r represents an integer from 1 to 6 inclusive, Z represents oxygen or sulphur and

when r represents 1, R_8 represents the group $CH{=}CH_2$, C_{3-6} alkenyl or the group COR_9 where R_9 is hydrogen, hydroxy, C_{1-6} alkyl, ar C_{1-6} alkyl wherein ar is as defined above, C_{1-6} alkoxy or the group $NR_{10}R_{11}$ where R_{10} is hydrogen or C_{1-6} alkyl and R_{11} is hydrogen or C_{1-6} alkyl and

when r represents an integer from 2 to 6, R_8 has any of the meanings given above or may additionally represent hydroxy, C_{1-6} alkoxy, aryloxy wherein ar is as defined above or the group $NR_{12}R_{13}$ where R_{12} is hydrogen or C_{1-6} alkyl and R_{13} is hydrogen, C_{1-6} alkyl, aroyl, ar C_{1-6} alkanoyl wherein ar is as defined above; C_{1-6} alkanoyl, C_{1-6} alkoxycarbonyl, C_{1-6} alkylsulphonyl or arylsulphonyl where ar is as defined above; or

(iii) the group $(CH_2)_xS(CH_2)_yR_{15}$, where x represents 1 or 2, y represents zero or 1, and R_{15} represents a heteroaryl group which is furyl, thienyl, pyrroyl, pyridinyl, pyrimidinyl, triazinyl, oxazolyl, triazolyl, thiadiazoyl, isoquinolyl, quinolyl, indolyl or benzoxazolyl, and with the ring(s) unsubstituted or substituted by one or more C_{1-3} alkyl, C_{1-3} alkoxy or hydroxy groups.

8. A method of treating a condition mediated through H_2-receptors which comprises administering to a patient an effective amount of a compound according to claim 1 to relieve said condition.

4,485,105

METHOD OF TREATING HYPERLIPIDEMIA WITH 4-(MONOALKYLAMINO)BENZOIC ACID AMIDES

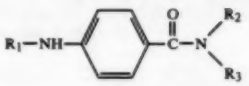
Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 950,899, Oct. 12, 1978, Pat. No. 4,242,273, which is a division of Ser. No. 836,949, Sep. 27, 1977, Pat. No. 4,136,256. This application May 30, 1980, Ser. No. 154,741

Int. Cl.[3] **A61K** *31/33, 31/535, 31/44, 31/445, 31/18, 31/425, 31/40, 31/135, 31/165*

U.S. Cl. 424—248.54 **22 Claims**

1. The method of treating hyperlipidemia and hyperlipoproteinemia and/or favorably altering the lipoprotein pattern in a mammal which comprises administering to said mammal a therapeutically effective amount therefor of a compound selected from the group consisting of those of the formula:



wherein R_1 is a straight chain or branched alkyl group of the formula C_nH_{2n+1} wherein n is an integer from 8 to 19, inclusive; R_2 is selected from the group consisting of hydrogen, lower alkyl, carboxy lower alkyl, carboalkoxy lower alkyl, lower alkanoyl, carbamoyl, di(lower alkyl)carbamoyl, lower alkanesulfonyl, benzenesulfonyl, sodium sulfo lower alkyl, sulfo lower alkyl, lower alkenyl, lower alkynyl, cyclohexyl, phenyl lower alkyl and ω-hydroxy lower alkyl; R_3 is selected from the group consisting of hydrogen, lower alkyl, hydroxy, lower alkoxy, halo lower alkyl, phenyl, carboxyphenyl, chlorophenyl, sodium sulfophenyl, pyridyl, pyridyl lower alkyl, mono- and poly-hydroxy lower alkyl, ω-lower alkoxy lower alkyl, ω-di(lower alkyl)amino lower alkyl, ω-piperidino lower alkyl, ω-pyrrolidino lower hydroxy alkyl, amino, di(lower alkyl)amino, lower alkanoylamino, lower alkanesulfonylamino, N-piperidyl, benzenesulfonylamino, and 4-lower alkyl-1-piperazino; and R_2 and R_3 taken together with the associated N(itrogen) is selected from the group consisting of pyrrolidino, piperidino, morpholino, hexamethyleneimino, 4-lower alkylpiperidino, 4-lower alkyl-1-piperazino, 4-phenylpiperazino, 3-pyrrolinyl, Δ^3-piperidino, 4-(carboethoxy or carboxy)-3-thiazolidinyl, and 4-carboethoxy-3-oxazolidinyl; and the pharmacologically acceptable acid-addition salts thereof.

4,485,106

SUBSTITUTED TETRAHYDROTETRAZOLO[5,1-A]PHTHALAZINES

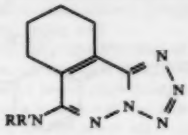
Norton P. Peet, and Shyam Sunder, both of Indianapolis, Ind., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 12, 1982, Ser. No. 397,297

Int. Cl.[3] **A61K** *31/50*; **C07D** *487/04*

U.S. Cl. 424—250 **5 Claims**

1. A compound of the formula:



wherein —NRR′ is (lower alkyl)amino, di(lower alkyl)amino, 1-pyrrolidinyl, 1-piperidinyl, methyl-1-piperidinyl, hexahydroazepin-1-yl, 4-methyl-1-piperazinyl and 4-methylhexahydro-1,4-diazepin-1-yl; and the pharmaceutically acceptable acid addition salts of said compound.

4,485,107

[[BIS(ARYL)METHYLENE]-1-PIPERIDINYL]ALKYL-PYRIMIDINONES

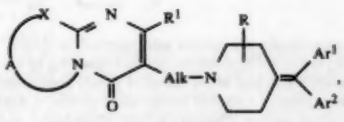
Ludo E. J. Kennis, Turnhout; Jan Vandenberk, Beerse, and Josephus C. Mertens, Oud-Turnhout, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 438,079, Nov. 1, 1982, abandoned. This application Jul. 27, 1983, Ser. No. 517,612

Int. Cl.[3] **C07D** *401/12;* **A61K** *31/505*

U.S. Cl. 424—251 **6 Claims**

1. A chemical compound having the formula



(I)

the possible stereochemically isomeric forms and the pharmaceutically acceptable acid-addition salts thereof, wherein:

R is hydrogen, hydroxy or lower alkyloxy;

R^1 is a member selected from the group consisting of hydrogen and lower alkyl;

Alk is a lower alkanediyl radical;

X is a member selected from the group consisting of $—CH_2—$ and $—C(R^2)=C(R^3)—$, said R^2 and R^3 being each independently hydrogen or lower alkyl;

A is a bivalent radical having the formula $—CH_2—CH_2—$, or

wherein R^4 and R^5 are each independently selected from the group consisting of hydrogen, halo, amino and lower alkyl; and

Ar^1 and Ar^2 are each independently selected from the group consisting of pyridinyl, thienyl and phenyl, being optionally substituted with halo, hydroxy, lower alkyloxy, lower alkyl and trifluoromethyl.

4,485,108

1-NAPHTHALENESULFONAMIDES, THEIR PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE

Ljerka Jozic, Hanover, Fed. Rep. of Germany, assignor to Beecham Wuelfing GmbH & Co., KG, Fed. Rep. of Germany

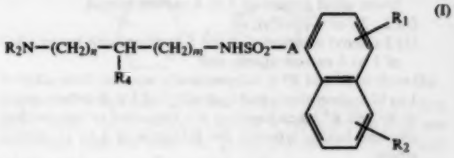
Filed Sep. 24, 1982, Ser. No. 423,441

Claims priority, application United Kingdom, Sep. 24, 1981, 8128857

Int. Cl.[3] **A61K** *31/495, 31/445, 31/40;* **C07D** *295/12*

U.S. Cl. 424—267 **14 Claims**

1. A compound of the formula (I) or a pharmaceutically acceptable salt thereof:



(I)

wherein:

A is a bond;

R^2 is hydrogen and R^1 is selected from C_{1-4} alkyl, hydroxyl, C_{1-4} alkoxy, C_{1-4} alkanoyloxy, hydrogen, halogen, nitro, cyano, and amino optionally substituted by one or two C_{1-4} alkyl groups or by C_{1-4} alkanoyl;

R^4 is C_{1-4} alkyl or hydroxy;

R_2N is 1-piperidyl substituted by one or two methyl groups in the 2-, 4- or 6-positions or 1-pyrrolidyl substituted by one or two methyl groups.

m is 0 or 1; and

n is 0 to 3.

10. A method of treatment or prophylaxis of cardiac arrhythmia in mammals including humans, comprising the administration to a sufferer of a therapeutically effective amount of a compound according to claim 1 or a pharmaceutically acceptable salt thereof.

4,485,109

4-ARYL-4-PIPERIDINECARBINOLS

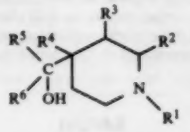
Engelbert Ciganek, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 376,229, May 7, 1982, abandoned. This application Feb. 25, 1983, Ser. No. 468,040

Int. Cl.[3] **A61K** *31/445;* **C07D** *211/22, 409/04, 403/04, 221/04, 215/14, 211/26*

U.S. Cl. 424—267 **15 Claims**

1. 4-Aryl-4-piperidinecarbinol of the formula:



wherein

(a) R^1 is H, alkyl of 1 to 12 carbon atoms, cycloalkyl of 3 to 8 carbon atoms or benzyl;

(b) each of R^2 and R^3 is independently selected from H and lower alkyl of 1 to 4 carbon atoms; R^1 and R^2 taken together is a branched or unbranched alkylene bridge wherein the bridge is of 3 or 4 carbon atoms; or R^2 and R^3 taken together is a branched or unbranched alkylene bridge wherein the bridge is of 3 to 6 carbon atoms;

(c) R^4 is

(1) phenyl or 2-naphthyl or phenyl or 2-naphthyl substituted with one or two substituents, the same or differ-

ent, selected from F, Cl, alkyl, perfluoroalkyl, alkoxy, aryloxy, alkylthio, arylthio, perfluoroalkoxy, perfluoroalkylthio and dialkylamino, said alkyl and alkoxy moieties being of 1 to 12 carbon atoms and said aryl moieties being of 6 to 12 carbon atoms;

(2) 2-, 3-, or 4-biphenylyl or 2-, 3-, or 4-phenylyl wherein either or both aromatic moieties is substituted with one or two substituents, the same or different, selected from F, Cl, alkyl, perfluoroalkyl, alkoxy, aryloxy, alkylthio, arylthio, perfluoroalkoxy, perfluoroalkylthio and dialkylamino, said alkyl and alkoxy moieties being of 1 to 12 carbon atoms and said aryl moieties being of 6 to 12 carbon atoms;

(3) 2-pyrrolyl or 2-pyrrolyl substituted with one to three lower alkyl groups of 1 to 4 carbon atoms;

(4) 2-, 3-, or 4-pyridyl; or

(5) 2-thienyl substituted in the 5-position with lower alkyl of 1 to 4 carbon atoms; and

(d) each of R^5 and R^6 is independently selected from alkyl of 1 to 12 carbon atoms and cycloalkyl of 3 to 8 carbon atoms or R^5 and R^6 taken together is a branched or unbranched alkylene bridge wherein the bridge is of 3 to 11 carbon atoms,

provided, however, when R^1, R^5 and R^6 are methyl and R^2 and R^3 are H, then R^4 is not p-t-butylphenyl or 2'-biphenylyl.

4,485,110

β-LACTAM COMPOUNDS, AND USE

Neal F. Osborne, Rusper, England, assignor to Beecham Group Limited, England

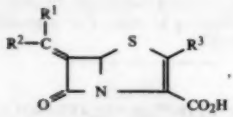
Filed Apr. 23, 1981, Ser. No. 257,481

Claims priority, application United Kingdom, Apr. 24, 1980, 8013563

Int. Cl.³ C07D *499/00*; A61K *31/425*

U.S. Cl. 424—270 **72 Claims**

1. A compound of formula (II):



(II)

a pharmaceutically acceptable salt or pharmaceutically acceptable in-vivo hydrolysable ester thereof, wherein R^1 and R^2 are the same or different and each is hydrogen, alkyl of 1 to 6 carbon atoms, phenyl or a non-toxic heterocyclic group unsubstituted or substituted with a pharmaceutically acceptable functional group; and R^3 is hydrogen, R^a or $—SR^a$ wherein R^a is alkyl of 1 to 6 carbon atoms or phenyl unsubstituted or substituted by hydroxy, alkoxy of 1–6 carbon atoms, alkanoyloxy of 1–6 carbon atoms, halo, mercapto, alkylthio of 1–6 carbon atoms, amino, mono- or dialkylamino of 1–6 carbon atoms in the alkyl moiety, alkanoylamino of 1–6 carbon atoms, carboxy or alkoxycarbonyl of 1–6 carbon atoms; or R^3 is pyridylthio.

4,485,111

DERIVATIVES OF 3-AMINO-1-BENZOFURANYLOXY-2-PROPANOL USEFUL AS CARDIOSELECTIVE BETA-BLOCKING AGENTS

Jean Lemoine, Garches, and Jean-Pierre Riffaud, Versailles, both of France, assignors to Laboratories Debat, Paris, France

Filed Oct. 28, 1982, Ser. No. 437,210

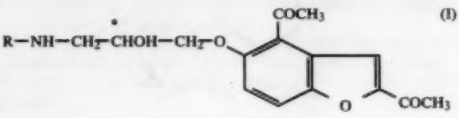
Claims priority, application France, Oct. 30, 1981, 81 20471

Int. Cl.³ C07D *307/80*; A61K *31/34*

U.S. Cl. 424—285 **4 Claims**

1. A derivative belonging to the family of 3-amino-1-heteroaryloxy-2-propanols, which is selected from the group consisting of:

(i) a (±)-, (+)- and (−)2,4-diacetyl-5-(3-alkyl-amino-2-hydroxypropyloxy)-benzofuran having the formula:



(I)

(wherein R represents an isopropyl or tert-butyl group), and

(ii) the pharmaceutically effective acid addition salts thereof.

4. A therapeutical composition for the treatment of arrythmia of the heart, angina pectoris, hypertension and the cardiovascular manifestations of hypertension which contains, in association with a physiologically acceptable excipient, an effective amount of at least one compound of any one of claims 1 to 3.

4,485,112

N-[(BENZOFURAN-2-yl)(PHENYL)METHYL]-ALKYLENE DIAMINES USEFUL IN TREATING ARRHYTHMIC, HISTAMINIC AND TUSSIVE CONDITIONS

Vittorio Pestellini; Mario Ghelardoni; Carlo Alberto Maggi, all of Florence; Gabrio Roncucci, Siena, and Alberto Meli, Florence, all of Italy, assignors to A. Menarini S.A.S., Italy

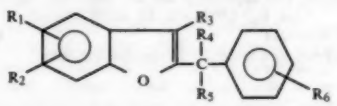
Continuation-in-part of Ser. No. 253,551, Apr. 13, 1981, abandoned. This application Feb. 22, 1983, Ser. No. 468,869

Claims priority, application Italy, Nov. 12, 1980, 9583 A/80

Int. Cl.³ A61K *31/34*; C07D *307/81*

U.S. Cl. 424—285 **16 Claims**

1. A compound selected from the group consisting of compounds having the formula



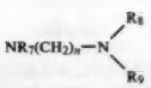
and pharmaceutically acceptable salts thereof, in which:

R_1 and R_2 are selected from the group consisting of a hydrogen atom, a halogen atom, an alkyl group containing 1 to 4 carbon atoms, a phenyl lower alkyl group, a naphthyl lower alkyl group, a phenyl group, a naphthyl group, a hydroxyl group, a lower alkoxy group, an NH_2 group, an NH-lower alkyl group, an N(lower alkyl)$_2$ group, an NH(CO-lower alkyl) group, an NH(CO-phenyl) group, an NH(CO-naphthyl) group, and an NO_2 group, and a ring of 5–8 carbon atoms including both R_1 and R_2;

R_3 is selected from the group consisting of a hydrogen atom, an alkyl group containing 1 to 4 carbon atoms, a phenyl group and a naphthyl group;

R_4 is selected from the group consisting of a hydrogen atom, a lower alkyl group, a phenyl group, a naphthyl group, a phenyl lower alkyl group and a naphthyl lower alkyl group;

R_5 is an



group in which n is an integer of from 1 to 4, R_7 is selected from the group consisting of a hydrogen atom and an alkyl group containing from 1 to 4 carbon atoms, and R_8 and R_9 are selected from the group consisting of a hydrogen atom, a lower alkyl group, a phenyl group, a naphthyl

group, a lower alkanoyl group, a phenyl lower alkanoyl group, a naphthyl lower alkanoyl group, a benzoyl group and a naphthoyl group; and

R_6 is selected from the group consisting of a hydrogen atom, a halogen atom, a lower alkyl group, a phenyl lower alkyl group, a naphthyl lower alkyl group, a phenyl group, a naphthyl group, a hydroxyl group, a lower alkoxy group, an NH_2 group, an NH-lower alkyl group, an N(lower alkyl)$_2$ group, an NHCO-lower alkyl group, an NHCO-phenyl group, and NHCO-naphthyl group and an NO_2 group.

15. A method of treating an arrhythmic, histaminic or tussive condition, which comprises administering to a mammal suffering from such a condition a correspondingly effective amount of a composition according to claim **11**.

4,485,113

CARBAMIC PESTICIDAL COMPOSITIONS

Themistocles D. J. D'Silva, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

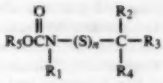
Continuation of Ser. No. 701,165, Jun. 30, 1976, abandoned. This application Feb. 12, 1979, Ser. No. 11,645

The portion of the term of this patent subsequent to Mar. 21, 1995, has been disclaimed.

Int. Cl.^{3} **A01N** *47/10*

U.S. Cl. 424—304 **24 Claims**

1. An insecticidal, miticidal or nematocidal composition comprising an acceptable carrier and as active toxicant an insecticidally, miticidally or nematocidally effective amount of a compound of the formula:



wherein:

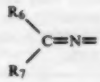
n is 1 or 2;

R_1 is alkyl;

R_2 and R_3 are individually alkyl, haloalkyl or R_2 and R_3 together may form an alkylene chain completing either a substituted or an unsubstituted cyclopentyl, cyclohexyl or a 6, 7 or 8 membered bicycloalkyl ring wherein the permissible substituents are one or more fluoro, chloro, bromo, alkyl or haloalkyl substituents in any combination;

R_4 is hydrogen, alkyl, chloro or cyano with the proviso that when R_2 and R_3 are both alkyl, R_4 may not be hydrogen or alkyl;

R_5 is



R_6 is hydrogen, chloro, alkyl, alkylthio or cyanoalkylthio; and

R_7 is chloro, carbamoyl, alkylcarbamoyl, amido dialkylcarbamoyl, dithiolanylalkyl or either substituted or unsubstituted alkyl, alkenyl, alkylthio, alkoxyalkyl, alkanoyl, phenyl or alkoxycarbonyl wherein the permissible substituents are one or more fluoro, chloro, bromo, cyano, nitro, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxy, carbamoyl, alkylcarbamoyl or dialkylcarbamoyl substituents; with the proviso that R_1, R_2, R_3, R_4, R_6 and R_7 substituents individually may not include more than eight aliphatic carbon atoms.

4,485,114

ARYLGLYOXALS USEFUL AS HYPOGLYCEMIC AGENTS

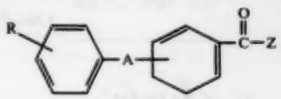
Middleton B. Floyd, Jr., Suffern, N.Y., and Vern G. DeVries, Ridgewood, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jan. 20, 1983, Ser. No. 459,450

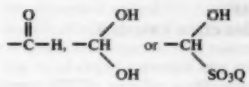
Int. Cl.^{3} **A61K** *31/185, 31/12;* **C07C** *143/42, 49/82*

U.S. Cl. 424—315 **20 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein A is selected from the group consisting of oxygen, sulfur, imino and (C_1–C_4)alkylimino; R represents at least one substituent selected from the group consisting of (C_1–C_4)alkylthio, hydrogen, trifluoromethyl and halogen with the proviso that when A is oxygen or sulfur then R cannot be hydrogen or halogen; Z is a moiety of the formulae:



wherein Q is an alkali metal or alkaline earth metal; and the hydrates thereof.

18. A method of treating hyperglycemia in a mammal in need of such treatment which comprises administering to said mammal an effective hypoglycemic amount of a compound as recited in claim **1**.

4,485,115

METHOD FOR TREATING DEPRESSIVE SYNDROME BY ADMINISTERING N-(DIETHYLAMINOETHYL)-2-METHOXY-5-METHYL-SUFONYL BENZAMIDE

Denis Besancon, Paris, France, assignor to Societe d'Etudes Scientifiques et Industrielles de Lle-de France, Paris, France

Filed Jun. 15, 1983, Ser. No. 504,419

Claims priority, application France, Jun. 17, 1982, 8210565

Int. Cl.^{3} **A61K** *31/165*

U.S. Cl. 424—324 **1 Claim**

1. A method for treating the depressive syndrome associated with withdrawal from alcohol comprising administering to a petient suffering from alcohol withdrawal symptoms N-(diethylaminoethyl)-2-methoxy-5-methylsulfonyl benzamide and the pharmacologically acceptable salts thereof in effective amounts.

4,485,116

ANTIPROTOZOAL COMPOUNDS

Alan T. Hudson, Lustleigh, Stonehouse La., Halstead, Sevenoaks, Kent, and Anthony W. Randall, 27 Hayes Garden, Hayes, Kent, both of England

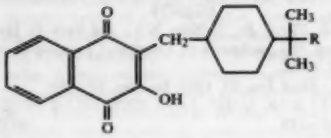
Filed Oct. 13, 1982, Ser. No. 433,866

Claims priority, application United Kingdom, Oct. 16, 1981, 8131206; Jul. 16, 1982, 8220680

Int. Cl.^{3} **A01N** *9/24;* **C07C** *50/12*

U.S. Cl. 424—331 **16 Claims**

1. A compound of the formula (I)



(I)

wherein R is a C_1 to C_{10} alkyl group, and pharmaceutically acceptable salts thereof.

4,485,117

ANTIPROTOZOAL COMPOUNDS

Alan T. Hudson, Lastleigh, Stonehouse La., Halstead, Sevenoaks, Kent, and Anthony W. Randall, 27 Hayes Garden, Hayes, Kent, both of England

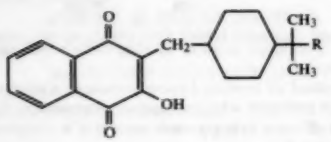
Filed Oct. 13, 1982, Ser. No. 433,867

Claims priority, application United Kingdom, Oct. 16, 1981, 8131206

Int. Cl.³ A01N *9/24*; C07C *50/12*

U.S. Cl. 424—331 **21 Claims**

1. A compound of the formula (I)



(I)

wherein R is a C_1–C_{10} alkyl group, and pharmaceutically acceptable salts thereof.

4,485,118

GUM COMPOSITION WITH PLURAL TIME RELEASING FLAVORS AND METHOD OF PREPARATION

Thomas J. Carroll, Astoria, N.Y.; Deborah Feinerman, Asbury Park, N.J.; Robert J. Huzinec, and Dominic J. Piccolo, both of Brooklyn, N.Y., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 21, 1983, Ser. No. 487,436

Int. Cl.³ A23G *3/30*

U.S. Cl. 426—5 **15 Claims**

1. A chewing gum composition having sequentially releasable, plural different flavors, comprising a gum base portion and a chewing gum portion, said gum base portion having dispersed separately therein at least one encapsulated flavor component, said encapsulated flavor component having a water-insoluble coating and being in the substantially anhydrous condition within said gum base, and

said chewing gum portion containing a second primary liquid flavor component having a flavoring different from the flavoring of said encapsulated flavor component said liquid flavor component being distributed throughout said gum composition and substantially separate from said encapsulated flavor component, wherein said primary liquid flavor component is present in amounts of about 0.15% to about 3.0% by weight and said encapsulated flavor component is present in amounts of about 0.1% to about 2.0% by weight.

4,485,119

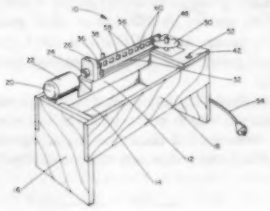
ELECTRIC GEAR DRIVE NUTCRACKER

William M. Price, Rte. 4, Box 226, Wake Forest, N.C. 27587

Filed Apr. 18, 1984, Ser. No. 601,707

Int. Cl.³ A23N *5/00*

U.S. Cl. 426—482 **12 Claims**



11. A method of automatically cocking and recocking a nutcracker having an impact nutcracking assembly for holding an uncracked nut therebetween, a movable striker movable between a cocked position and an impact position and biased to move from said cocked position to said impact position wherein the same impacts against said impact nutcracking assembly for cracking the nut therebetween, said method comprising the steps of:

A. actuating an electric motor and driving a gear operatively connected to said electric motor;

B. projecting respective teeth on said gear into gear teeth receiving openings formed on a striker drive bar secured to said striker;

C. moving said striker and said striker drive bar secured thereto from said impact position to said cocked position by rotatively driving said gear and advancing said striker toward said cocked position by rotating said gear while the teeth thereof are engaged with said striker drive bar and wherein the engagement of the teeth of said gear with said striker drive bar advances and moves said striker drive bar toward said cocked position;

D. disengaging the teeth of said gear from said striker drive bar when said striker reaches said cocked position, and releasing said striker and the attached striker drive bar from said gear and the teeth thereof in response to said striker reaching said cocked position;

E. striking said impact nutcracker assembly with said striker after said striker drive bar has been disengaged from said gear;

F. continuing to rotate said gear for a selected time period before said striker is advanced back to said cocked position by said gear in order that said nutcracker may be reloaded;

G. then engaging and advancing said striker drive bar with said gear and recocking said striker and releasing the same in order that the striker may impact again against said impact nutcracking assembly; and

H. continuing the above steps in a continuous fashion for repeatedly cracking nuts.

4,485,120

PROCESS FOR PREPARING AN INSTANT BABY CEREAL PORRIDGE PRODUCT

Scott Gantwerker, LaGrange, and Sai Leong, Buffalo Grove, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Division of Ser. No. 416,190, Sep. 9, 1982, Pat. No. 4,438,150. This application Jan. 6, 1984, Ser. No. 568,665

The portion of the term of this patent subsequent to Mar. 20, 2001, has been disclaimed.

Int. Cl.³ A23L *1/10*; A21D *8/06*

U.S. Cl. 426—625 **3 Claims**

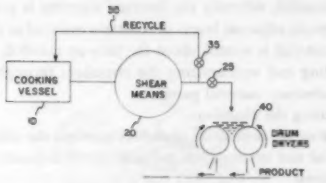
1. A process for preparing a dry, gelatinized, cereal porridge

product capable of being instantly prepared as a hot or cold cereal porridge comprising:

a. preparing a slurry of cereal flour having a Mesh size less than U.S. Mesh size #40, and water in which the flour is present in an amount of from 14 to 30% inclusive based on the weight of the slurry;

b. gelatinizing the cereal flour slurry by heating until such time as the gelatinized cereal flour-water mixture has achieved a temperature in the range 180°–212° F. and the viscosity of the gelatinized cereal mixture is greater than 20,000 cps as measured on a RVT Brookfield viscometer at 50 rpm using spindle #7;

c. continuously subjecting the gelatinized cereal mixture during and after heating to mechanical shear of sufficient



intensity and duration to reduce the final viscosity of said gelatinized cereal mixture to a viscosity less than 10,000 cps as measured on a RVT Brookfield viscometer at 50 rpm using spindle #5 yielding a reduced viscosity gelatinized cereal mixture, wherein the mixture is continuously subjected to mechanical shear by circulating the mixture through a high speed mechanical shear means situated in a recycle line which returns the reduced viscosity gelatinized cereal flour-water mixture to the vessel in which the mixture is being gelatinized; and

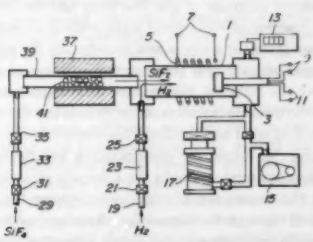
d. dehydrating on a drum drier the reduced viscosity cereal mixture to a moisture in the range 2.0 to 9.0% inclusive, and pulverizing the dehydrated material thereby forming the dry gelatinized cereal product.

4,485,121

METHOD FOR PRODUCING A FLUORINE-CONTAINING AMORPHOUS SEMICONDUCTOR

Hideki Matsumura, Tokyo, Japan, assignor to Tokyo Institute of Technology, Tokyo, Japan

Filed Jun. 10, 1983, Ser. No. 503,088
Claims priority, application Japan, Jun. 16, 1982, 57-101970
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—39 **7 Claims**



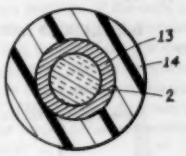
1. A method for producing a fluorine-containing amorphous semiconductor, which comprises decomposing a mixed gas obtained by mixing silicon difluoride SiF_2 gas or silicon monofluoride SiF gas with hydrogen (H_2) gas or hydrogen atom (H) gas, or $SiFH_3$ gas or SiF_2H_2 gas with electric discharge and depositing the decomposed gas on a substrate to form a fluorine-containing amorphous semiconductor.

4,485,122

METHOD OF AN ARRANGEMENT FOR COATING OPTICAL FIBERS WITH METALLIC MATERIALS

Joseph C. Williams, Buchanan, Va.; Jeff P. Garmon, Rome, Ga.; Dipak R. Biswas, Roanoke, Va., and Dilip K. Nath, Framingham, Mass., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 23, 1983, Ser. No. 477,995
Int. Cl.³ B05D *5/06*
U.S. Cl. 427—45.1 **13 Claims**



1. A method of coating optical fibers, comprising the steps of contacting the respective optical fiber with a metal-organic material capable of adhering to the optical fiber to form on the latter a continuous layer of such material; and converting the metal-organic material into volatile non-metallic, and non-volatile metallic, components respectively leaving the continuous layer, and remaining therein in the form of a metallic material.

4,485,123

PROCESS FOR PRODUCING TEXTURED COATINGS

Harden H. Troue, Plainfield, Ind., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 527,986, Aug. 31, 1983, , which is a continuation of Ser. No. 348,345, Feb. 12, 1982, Pat. No. 4,421,784. This application Nov. 8, 1983, Ser. No. 549,745
The portion of the term of this patent subsequent to Dec. 20, 2000, has been disclaimed.
Int. Cl.³ B05D *3/02, 3/06*
U.S. Cl. 427—54.1 **6 Claims**

1. In a process for providing a textured coating on a substrate, which coating has a thickness of about 0.1 mil to about 10 mils, comprising the following steps:

(a) applying a coating, which is curable with ultraviolet light, to the substrate, said coating having a viscosity, as applied, of at least about 50 centipoises;

(b) changing the viscosity of the coating by exposing the coating to ultraviolet light, said viscosity being changed to a viscosity no higher than that at which the coating is capable of being textured in steps (c) and (d);

(c) exposing the coated substrate to ultraviolet light having wavelengths in the range of about 1800 Angstroms to about 2750 Angstroms in an inert atmosphere for a period of time sufficient to initiate texturing at the surface of the coating;

(d) maintaining the coated substrate from step (c) in a space essentially devoid of ultraviolet light for a period of time sufficient for the surface of the coating to texture; and

(e) exposing the coated substrate from step (d) to ultraviolet light having wavelengths in the range of about 1800 Angstroms to about 4000 Angstroms in an inert atmosphere or air until the coating is essentially cured,

the improvement comprising, (i) providing a coating, which is essentially devoid of pigment; (ii) providing for the substrate, a substrate, the surface of which is, in part, dark colored and adsorbent to infrared light, and, in part, light colored and reflective to infrared light; and (iii) after step (b) and before step (c), exposing the coated substrate to

infrared light whereby the viscosity of the coating, which is above the dark colored part, is decreased to a greater extent than the coating, which is above the light colored part,

whereby a relatively greater amount of texture is obtained in the coating, which is above the dark colored part than in the coating which is above the light colored part.

4,485,124

EVAPORATION OF BLOOMING LAYERS ONTO OPTICAL SUBSTRATES

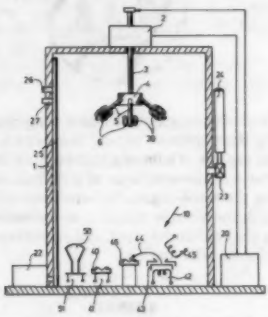
Delio Ciparisso, Ascona, Switzerland, assignor to Satis Vacuum AG, Zürich, Switzerland

Filed Aug. 27, 1981, Ser. No. 296,806

Claims priority, application Switzerland, Sep. 3, 1980, 6621/80

Int. Cl.³ B05D 5/06

U.S. Cl. 427—55 **7 Claims**



1. A method of coating blooming layers onto optical substrates comprising the steps of:

placing a substrate into a vacuum vessel;

evacuating the vacuum vessel;

treating the substrate to infrared radiation; and

vapor deposition coating blooming layers onto the infrared radiation treated substrate, the infrared radiation treatment continuing during coating.

4,485,125

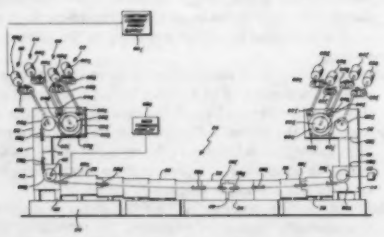
METHOD FOR CONTINUOUSLY PRODUCING TANDEM AMORPHOUS PHOTOVOLTAIC CELLS

Masatsugu Izu, Birmingham, and Herbert C. Ovshinsky, Oak Park, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 359,825, Mar. 19, 1982,. This application Jan. 24, 1983, Ser. No. 460,629

Int. Cl.³ C23C 13/02

U.S. Cl. 427—74 **2 Claims**



1. A method of continuously producing tandem, amorphous photovoltaic cells on an elongated web of substrate material which is adapted to continuously move from a pay-off mandril through a substrate cleaning chamber and a series of at least two triads of isolated deposition chambers to a take-up mandril; sources of reaction gases including at least precursor semiconductor material; means for introducing reaction gas mixtures into each deposition chamber for disassociation and deposition of successive noncrystalline semiconductor layers of varying conductivity onto the web of substrate material passing therethrough; the method comprising the steps of:

automatically threading the web of substrate material so as to deliver and secure the leading edge thereof from the pay-off mandril to the take-up mandril;

attaching the leading edge of replacement interleaf sheeting from a replacement interleaf core to the substrate material prior to winding the substrate material about the take-up mandril, whereby the interleaf sheeting is positioned between adjacent layers of substrate material as the substrate material is wound about the take-up mandril;

sealing and vacuumizing the chambers through which the substrate material passes;

flushing the chambers;

heating the deposition chambers to warm the substrate material and the reaction gas mixtures to deposition temperatures;

providing a gas gate between each pair of adjacent deposition chambers of each triad;

providing a source of sweep gas;

introducing the sweep gas into each of the gas gates;

providing sources of reaction gases;

setting mixtures of reaction gases and introducing the preset reaction gas mixtures into the deposition chambers, the flow of reaction gas mixtures and the flow of sweep gas adapted to substantially prevent cross-contaminating of the process gas mixtures in adjacent deposition chambers;

providing sources of cleansing gases;

setting a flow of cleansing gases into a substrate cleaning chamber;

the step of setting and introducing the reaction gas mixtures further comprising: (1) setting a flow of semiconductor precursor gases and a dopant gas from the sources into the first deposition chamber of each triad; (2) setting a flow of semiconductor precursor gases and a dopant gas of opposite conductivity from the sources into the third deposition chamber of each triad; and (3) setting a flow of semiconductor precursor gases into the second deposition chamber of each triad;

providing sources of isolation gases;

providing a discrete isolation chamber between the third deposition chamber of the first triad and the first deposition chamber of the second triad; setting an isolation gas mixture from the sources and introducing the preset isolation gas mixture into the discrete isolation chamber; directing the isolation gas mixture to unidirectionally flow from the discrete isolation chamber into the third chamber of the first triad and the first chamber of the second triad;

energizing the means for disassociating and depositing the reaction gas mixtures onto the substrate material;

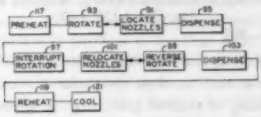
starting the means for continuously moving the substrate material through the deposition chambers; and

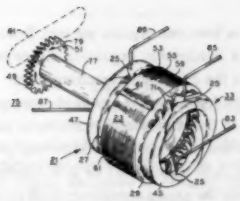
substantially maintaining the preset substrate temperature, speed of substrate travel, substrate tension, mixtures of reaction gases in each deposition chamber, mixtures of isolation gases in the isolation chamber, sweep gas in the gas gates, pressure differentials between adjacent chambers, and vacuum pressures; whereby, high quality tandem photovoltaic cells may be continuously produced.

4,485,126
METHOD OF TREATING WINDING MEANS OF DYNAMOELECTRIC MACHINE CORE

Joseph R. Gaietto, Tiffin, Ohio, and William J. Smith, Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Filed Dec. 21, 1983, Ser. No. 563,765
Int. Cl.[3] H02K *15/00*
U.S. Cl. 427—116 25 Claims





1. A method of treating winding means of a dynamoelectric machine core with a liquid adhesive material, the core including a pair of opposite end faces, a bore extending generally axially through the core and intersecting with the opposite end faces of the core, and a plurality of slot means intersecting with both the bore and the opposite end faces of the core for receiving the winding means, respectively, the winding means including a plurality of sets of coils, each coil having at least one conductor turn with opposite side turn portions of the coils received in the slot means of the core and with opposite end turn portions of the coils arranged in generally annular groupings about the bore adjacent the opposite end faces of the core, respectively, the method comprising the steps of:

preheating at least the winding means associated with the core to at least a preselected temperature;

rotating the core in one direction at a speed generally between a preselected low value and a preselected high value;

feeding the liquid adhesive material onto the opposite end turn portions of the coils generally at a preselected rate of flow to generally obviate dripping of the liquid adhesive material from the opposite end turn portions of the coil when the rotational speed of the core is generally about the preselected low value thereof and to generally obviate centrifugal displacement of the liquid adhesive material from the opposite end turn portions of the coil when the rotational speed of the core is generally about the preselected high value thereof;

retaining in the opposite end turn portions of the coils a part of the liquid adhesive material fed thereto during the feeding step and flowing another part of the liquid adhesive material from the opposite end turn portions of the coils generally along the opposite side turn portions of the coils into the slot means of the core in which the opposite side turn portions of the coils are received thereby to at least in part fill the slot means in which the one opposite side turn portions of the coils are received with the liquid adhesive material fed thereinto while at least generally impeding the fill of the slot means of the core in which the other of the opposite side turn portions of the coils are received with the liquid adhesive material when the core is being rotated in the one direction;

interrupting the feeding of the liquid adhesive material onto the opposite side turn portions of the coils at least when a preselected volume of the liquid adhesive material has been fed thereto during the rotation of the core in the one direction;

terminating the rotation of the core in the one direction;

reestablishing the rotation of the core in another direction opposite the one direction at a speed generally between the preselected low and high values thereof;

repeating the feeding step while the core is being rotated in the another direction;

flowing the liquid adhesive material from the opposite end turn portions of the coils generally along the opposite side turn portions of the coils into the slot means of the core in which the side turn portions of the coils are received and filling at least in part the slot means in which the other opposite side turn portions of the coils are received with the liquid adhesive material fed thereinto while at least generally impeding the fill of the slot means of the core in which the one opposite side turn portions of the coils are received with the liquid adhesive material when the core is being rotated in the another direction thereby to generally equalize the liquid adhesive material fill of the slot means of the core;

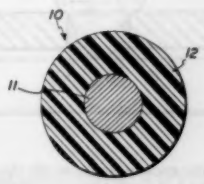
ceasing the feeding of the liquid adhesive material onto the opposite end turn portions of the coils at least when another preselected volume of the liquid adhesive material has been fed thereto during the rotation of the core in the another direction and supplementing thereby the first named preselected volume of the liquid adhesive material fed onto the opposite end turn portions of the coils during the rotation of the core in the one direction so as to at least generally saturate the winding means with the liquid adhesive material; and

heating further at least the winding means associated with the core to effect the gel and cure of the liquid adhesive material.

4,485,127
ENAMEL HAVING IMPROVED COATABILITY AND INSULATED ELECTRICAL ARTICLES PRODUCED THEREFROM

Denis R. Pauze, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 183,857, Sep. 3, 1980, abandoned. This application May 21, 1982, Ser. No. 380,660
Int. Cl.[3] B05D *5/12*; C08L *77/00*; B32B *15/08, 27/34*
U.S. Cl. 427—120 6 Claims

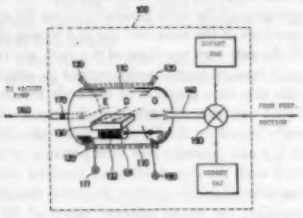


1. In a method for covering an electrical article with an insulating coating comprising a curable polyesterimide resin dissolved in a solvent, and curing said resin, the improvement which comprises including in said polyesterimide resin dissolved in a solvent a small amount, sufficient to enhance surface coatability and smoothness, of a nylon polymer.

4,485,128
BANDGAP CONTROL IN AMORPHOUS SEMICONDUCTORS

Vikram L. Dalal; M. Akhtar, both of Lawrenceville, and Shek-Chung Gau, Hamilton Square, all of N.J., assignors to Chronar Corporation, Princeton, N.J.

Continuation-in-part of Ser. No. 325,585, Nov. 20, 1981,. This application Jan. 7, 1982, Ser. No. 337,627
Int. Cl.³ H01L 21/205
U.S. Cl. 427—85 20 Claims



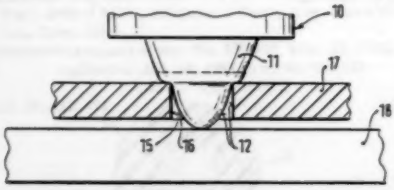
1. The method of producing amorphous semiconductor hydrides with specified bandgaps which comprises

creating said hydrides pyrolytically on a substrate which is maintained at a first temperature within a reactor that is in turn maintained at a second temperature, by controlling the temperature and partial pressure of higher order semiconductanes.

4,485,129
METHOD OF THROUGH-CONTACTING A CIRCUIT BOARD

Werner Grünwald, Gerlingen, and Kurt Schmid, Ditzingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/EP82/00241, § 371 Date Jun. 23, 1983, § 102(e) Date Jun. 23, 1983, PCT Pub. No. WO83/01886, PCT Pub. Date May 26, 1983
PCT Filed Nov. 10, 1982, Ser. No. 518,795
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1981, 3145584
Int. Cl.³ B05D 5/12; B05C 1/00
U.S. Cl. 427—97 13 Claims



1. A method of electrically conductively through-contacting a circuit board formed with bores or openings (16) therethrough, characterized by the steps of

applying an electrically conductive paste (12) to an elastically deformable printing stamp (10,11) which is shaped to penetrate into the bore or opening (16);

inserting said stamp at least partially into said bore; and

deforming said stamp in such a manner as to forcibly imprint the electrically conductive paste (12) on the walls (15) of said bore.

4,485,130
BASIC LIQUID COMPOSITION SUITABLE FOR PRODUCING TRANSPARENT COATINGS OR VARNISHES ON SOLID SURFACES, PROCESS FOR PREPARATION OF SUCH VARNISHES, AND VARNISHES PRODUCED THEREBY

Jean-Pierre Lampin, Ponthierry, and Yves Leclaire, Veneux les Sablons, both of France, assignors to Institut National de Recherche Chimique Appliquee, Paris, France

Filed Mar. 8, 1983, Ser. No. 473,299
Claims priority, application France, Mar. 16, 1982, 82 04409
Int. Cl.³ A23F 3/00
U.S. Cl. 427—387 20 Claims

1. A stable basic liquid composition of matter suitable for forming transparent coatings on surfaces selected from the group consisting of mineral glass, organic glasses of thermoplastic polymethacrylate and polycarbonate materials, and heat hardenable diallylglycol polycarbonate materials, and having a storage stability of at least 3 months at 15° C., comprising

in solution in at least one organic solvent, from 10 to 40% by weight of a hardenable organo-silicic compound corresponding to the compound resulting from

effecting a first hydrolysis reaction at a temperature lower than 50° C. in the presence of a carboxylic acid and water, on at least one alkoxysilane compound (A) of formula $R'_nSi(OR)_{4-n}$ in which n=1 or 2, R represents a radical selected from the group consisting of alkyl radicals with 1 to 4 carbon atoms, the alkyloxyalkyl and acyl radicals, and R' represents a radical selected from the group consisting of alkyl, alkylene, aryl, aralkyl, alklylaryl and alkylenearyl radicals, together with a small amount of $Si(OR'')_4$, wherein R'' is alkyl or alkyloxyalkyl,

removing under vacuum of volatile alkanol formed in the course of said first hydrolysis

and

effecting a second hydrolysis at a temperature lower than 40° C., on a mixture of (1) said first hydrolyzate resulting from said first hydrolysis, and which first hydrolyzate has been concentrated, then rediluted with a solvent less volatile than said alkanol of said first hydrolysis reaction and consisting of a mixture of C_1–C_4-alkanols, and (2) at least one alkoxysilane compound (C) of formula $R'''Si(OR_1)_3$, in which R''' represents a radical selected from the group consisting of epoxyalkyl and epoxyalkyloxyalkyl radicals, and R_1 represents a C_1–C_4-alkyl radical, then adjustment of pH of the resulting medium to between 3.5 and 5.5 through addition of an organic base.

15. A process of preparation of a varnish coated product, the coating presenting a combination of the following main properties: good adherence to mineral and organic glass surfaces, good scratching and abrasion strength, good hardness, good opacification strength longevity, good cracking strength and good resistance to water and moist atmospheres, said process consisting essentially of

the preparation of a basic liquid composition according to claim 1, presenting a viscosity of between 10 and 20 centipoises,

the application of such a composition onto said glass surface so as to obtain a coating containing from 2 to 50 g of solid material per square meter of coated area, and

the submission of said coated surface to a thermal treatment to cause hardening thereof.

4,485,131

ALKALINE AQUEOUS COATING SOLUTION AND PROCESS

Richard G. Adams, Audubon; Kurt Goltz, Exton, and Frederick J. Spaeth, Downingtown, all of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Mar. 4, 1983, Ser. No. 472,310
Int. Cl.³ B05D 3/02
U.S. Cl. 427—388.2 32 Claims

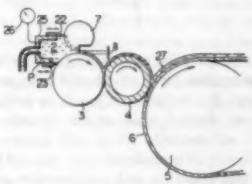
14. A process for forming a corrosion resistant coating on a metal substrate comprising coating the surface of the substrate with an aqueous alkaline composition comprising water, greater than about 0.25 gm/liter to less than about 5.0 gm/liter of composition of a water soluble salt of an acrylic polymer which contains carboxyl groups, a divalent metal ion which is effective to crosslink the acrylic polymer, a volatile base and a defoamer so as to form a dry, crosslinked acrylic polymer coating on said surface.

4,485,132

METHOD OF CONTINUOUS COATING OF METALLIC STRIP MATERIAL

Yoshihisa Furuzono; Toshiyuki Kajiwara; Toshiyuki Kadota, all of Hitachi; Kazuyuki Nakano, Ichikawa, and Kenzi Tabusi, Chiba, all of Japan, assignors to Hitachi, Ltd. and Nisshin Steel Co., Ltd., both of Tokyo, Japan

Filed Jul. 16, 1982, Ser. No. 398,865
Claims priority, application Japan, Jul. 17, 1981, 56-110733
Int. Cl.³ B05D 1/28
U.S. Cl. 427—428 3 Claims



1. A method of continuous coating of metallic strip material comprising the steps of regulating the amount of a paint fed to a pickup roll to a predetermined film thickness by a thickness control member facing the surface of the pickup roll when the paint is transferred to an applicator roll, and successively transferring the paint from the applicator roll to the surface of the metallic strip material continuously travelling relative to the applicator roll to form a coating of a desired film thickness on the surface of the metallic strip material, the regulating of the amount of paint fed to the pickup roll being effected by the steps comprising:

setting beforehand a first relation representing the relation between a thickness of the coating applied under constant pressure of the paint fed to the pickup roll and the size of a gap as viewed radially of the pickup roll between the roll surface and the thickness control member;

selecting a size of the gap corresponding to said predetermined film thickness on the basis of said relation; and

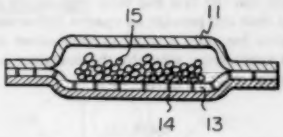
regulating the size of the gap at the selected value in a feedback control manner, said regulating step for the gap size including a direct measuring of an actual size of said gap at the opposite end portions of said pickup roll, said opposite end portions being separated from a mid portion of the pickup roll by paint drain grooves for protecting said opposite end portions from paint contamination.

4,485,133

OXYGEN ABSORBENT PACKAGING

Sadao Ohtsuka, Chiba; Toshio Komatsu, Tokyo; Yukio Kondoh, Saitama, and Hideyuki Takahashi, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed May 11, 1982, Ser. No. 377,154
Int. Cl.³ B32B 3/10
U.S. Cl. 428—35 1 Claim



1. An oxygen absorbent package comprising first and second porous plastic outer layers, a single porous intermediate plastic layer and an oxygen absorbent disposed between one of said outer layers and said intermediate layer, said intermediate layer being gas permeable and having a lower softening point than the first and second outer layers and being in contact with and simultaneously heat sealed to said outer layers only around their peripheral edges, and said porous outer layers being gas permeable and water impermeable and consisting of a microporous film or nonwoven fabric sheet having a permeability between 0.01 and 10,000 sec. per 100 ml of air.

4,485,134

PLASTIC CONTAINERS FOR STORAGE OF GOODS UNDER PRESSURE

Kjell M. Jacobsen, Hjallese, Denmark, assignor to PLM Aktiebolag, Malmo, Sweden

Continuation of Ser. No. 196,573, Oct. 14, 1980, Pat. No. 4,387,815, which is a division of Ser. No. 22,320, Mar. 20, 1979, Pat. No. 4,264,558, which is a continuation of Ser. No. 831,785, Sep. 9, 1977, abandoned, which is a continuation of Ser. No. 614,430, Sep. 18, 1975, abandoned. This application Apr. 29, 1983, Ser. No. 489,933
Claims priority, application Sweden, Sep. 24, 1974, 7411960
The portion of the term of this patent subsequent to Jun. 14, 2000, has been disclaimed.
Int. Cl.³ B65D 23/00
U.S. Cl. 428—35 8 Claims

1. A form-retaining container made of a thermoplastic polymer material selected from the group consisting of polyethylene terephthalate, polyhexamethylene adipamide, polycaprolactam, polyhexamethylene sebacamide, polyethylene 2,6 and 1,5 naphthalate, polyetramethylene-1,2-dioxybenzoate, and copolymers of ethylene terephthalate and ethylene isophthalate; said container comprising in succession a mouth, a neck, a main body portion, and a bottom including a central portion and a peripheral portion, said container having a first region inclusive of said mouth and part of said neck, a second region

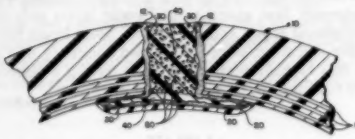
inclusive of the remainder of said neck, said main body portion and said peripheral portion of said bottom, and a third region constituted by said central portion of said bottom, said polymer material being selectively heated, inflated and cooled so that said second region is obtained by stretching said material in said second region in more than one direction to achieve biaxial stretching and orientation of the material while the material in said first and third regions is substantially unoriented, whereafter the material is heated while being internally pressurized to effect thermal crystallization and release of internal stresses such that the first and third regions are in a thermocrystallized state and provide an opaque appearance while the second region has only a small crystallization to provide a transparent appearance, whereby the container is form stable when reheated.

4,485,135

AMBIENT TEMPERATURE CURE OF ELASTOMERIC ARTICLES HAVING A DEFORMITY THEREIN

Russell W. Koch, Hartville, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 21, 1983, Ser. No. 477,453
Int. Cl.³ F16L *11/12*; B32B *25/04*
U.S. Cl. 428—36 **21 Claims**



1. A repaired, reinforced elastomer article wherein said repair contains a rubber filler in a cured amine curable prepolymer or polymer, comprising:

(a) the elastomer article, said elastomer having unsaturated groups therein, said article being cured and having a hollow therein;

(b) a cured elastomer patch having cords therein, said patch located juxtaposition to said hollow;

(c) a treating agent, said treating agent coating said hollow and said article in said patch juxtaposition area, said treating agent selected from the group consisting of N-halohydantoins, N-haloamides, N-haloimides, and combinations thereof;

(d) the amine curable polymer or prepolymer having the rubber filler therein, said amine curable polymer or prepolymer substantially filling said hollow, said amine curable polymer or prepolymer also located between said patch and said article in said juxtaposition area, wherein the amount of said rubber filler in said hollow is from about 10 percent to about 75 percent by weight based upon the weight of said amine curable polymer or prepolymer and said rubber filler and wherein said rubber filler particle size ranges from about 10 millimeters to about 0.01 millimeters;

(e) said amine curable polymers or prepolymers bonded to said patch and said hollow at ambient temperature.

4,485,136

AMBIENT TEMPERATURE REPAIR OF ELASTOMERIC ARTICLES HAVING A HOLLOW THEREIN

Russell W. Koch, Hartville, and Walter R. Hausch, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

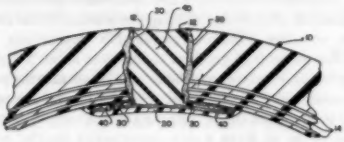
Filed Mar. 21, 1983, Ser. No. 477,454
Int. Cl.³ F16L *11/12*; B32B *25/04*
U.S. Cl. 428—36 **18 Claims**

1. A repaired, reinforced elastomer article, wherein said repair contains an elastomer patch and a cured amine curable polymer or prepolymer essentially free of rubber filler, comprising:

(a) the elastomer article, said elastomer having cords therein and having unsaturated groups therein, said article being cured and having a hollow therein;

(b) the elastomer patch, said patch having cords therein and being cured and located juxtaposition to said hollow;

(c) a treating agent, said treating agent coating said hollow



and said article in said patch juxtaposition area, said treating agent selected from the group consisting of N-halohydantoins, N-haloamides, N-haloimides, and combinations thereof;

(d) the cured amine curable polymer or prepo selected from the group consisting of (a) epoxy resins; (b) halogen-containing hydrocarbon polymers; (c) chlorosulfonated polymers; (d) polymers containing acid halide groups such as

or haloformate groups such as

(e) polymers containing anhydride groups which, on reaction with diamines, yield amide-acid linkages, (f) organopolysiloxanes; (g) urethane polymers or prepolymers; and combinations thereof, said amine curable polymer or prepolymer substantially filling said hollow, said amine curable polymer of prepolymer also located between said patch and said article in said juxtaposition area;

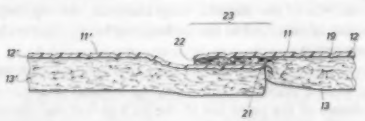
(e) said cured amine curable polymer or prepolymer bonded to said patch and said hollow at ambient temperature.

4,485,137

CONCRETE CURING BLANKET

Richard L. White, 15803 Parksley Dr., Houston, Tex. 77059

Filed Feb. 3, 1983, Ser. No. 463,406
Int. Cl.³ B32B *3/00*
U.S. Cl. 428—57 **8 Claims**



1. A concrete curing blanket comprising

(a) a film-like surface layer without perforations of a nonporous low density thermoplastic;

(b) a thick layer of porous and resilient polymeric filament batting adapted to yieldably conform to a concrete surface covered by the blanket, said batting being hydrophobic but having sufficient filament length to promote water wicking properties, and

(c) said surface layer heat sealed and bonded only onto the

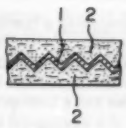
upper portion of said batting layer but said surface layer remaining impervious to water and without perforations, whereby said blanket covers coextensively water-wetted concrete irrespective of surface irregularities and maintains water wetting uniformly across the surface area thereof, and said blanket heat sealable to an adjacent blanket to provide a continuous blanket across a large area of the water-wetted concrete.

4,485,138

HEAT-RESISTANT SHEET GASKET

Tsutomu Yamamoto; Masaaki Ashizawa, and Yutaka Shimoda, all of Yokohama, Japan, assignors to Nichias Corporation, Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 428,667
Claims priority, application Japan, Dec. 16, 1981, 56-203102
Int. Cl.³ B32B *3/10*
U.S. Cl. 428—131 **15 Claims**



1. A heat-resistant sheet gasket obtained by preparing a milled blend comprising extremely short fibers of wollastonite needle crystals of C_aSiO_3, natural or synthetic rubber together with an amount of fibrillated polymeric long fibers having hair root-like branches, an amount of clay fillers and thermally conductive fine particles of carbon, aluminum, copper, a copper alloy, stainless steel, steel, and laminating the blend under pressure on both sides of a thin metal sheet followed by vulcanization.

4,485,139

HEAT-SENSITIVE RECORDING PAPER

Shojiro Watanabe; Tomizo Namiki, and Fumiaki Shinozaki, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 22, 1983, Ser. No. 487,621
Claims priority, application Japan, Apr. 28, 1982, 57-72201
Int. Cl.³ B41M *5/16, 5/18, 5/22*
U.S. Cl. 428—219 **7 Claims**

1. A heat-sensitive recording paper, comprising:

(A) a support base having positioned thereon;

(B) a heat-sensitive color forming layer containing, as color forming components, (i) an almost colorless electron donating dye and (ii) an organic acid capable of forming color when contacted with the dye; and

(C) a coating layer positioned on the heat-sensitive color forming layer, wherein the coating layer comprises polyvinyl alcohol and boric acid; wherein the degree of saponification of the polyvinyl alcohol is 80 to 100 mol% and wherein the boric acid is present in an amount of 1 to 20 parts by weight per 100 parts by weight of the polyvinyl alcohol.

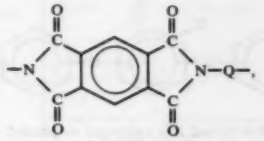
4,485,140

MELT-FUSIBLE POLYIMIDES

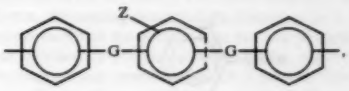
Thomas P. Gannett; Hugh H. Gibbs, and Robert J. Kassal, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 534,208, Sep. 21, 1983, , which is a continuation-in-part of Ser. No. 475,034, Mar. 14, 1983, abandoned. This application Jan. 27, 1984, Ser. No. 574,694
Int. Cl.³ B32B *27/12, 27/28*
U.S. Cl. 428—260 **25 Claims**

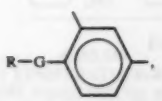
1. A melt-fusible polyimide consisting essentially of the following repeating units



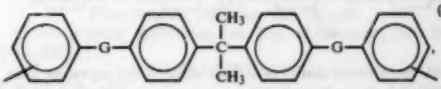
where Q is each repeating unit, independently of any other unit, is a divalent organic radical selected from the following:



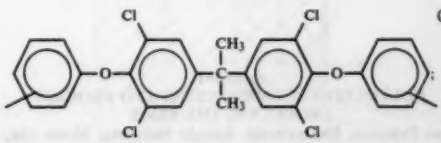
where G is O or S, and Z is hydrogen or phenyl; and, when Z is hydrogen, both terminal covalent bonds are either in the ortho or meta position with respect to G; while, when Z is phenyl, both terminal covalent bonds are in ortho, meta, or para position with respect to G;



where G is O or S; and R is phenyl, biphenyl, or naphthyl;

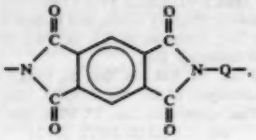


where G is O or S and both terminal covalent bonds are in the ortho or meta position with respect to G; and



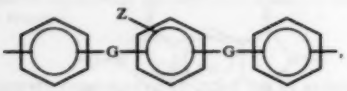
with the proviso that Q in at least some of the repeating units has the above formula (d).

15. A substantially void-free composite structure consisting essentially of a fibrous substrate impregnated with a melt-fusible polyimide containing up to about 10% of end-capped amino or anhydride groups and consisting essentially of the following repeating units:



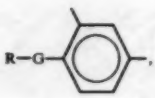
where Q in each repeating unit, independently of any other unit, is a divalent organic radical selected from the following:

(a)



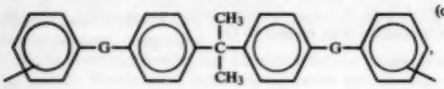
where G is O or S; and Z is hydrogen or phenyl; and, when Z is hydrogen, both terminal covalent bonds are either in the ortho or meta position with respect to G; while, when Z is phenyl, both terminal covalent bonds are in ortho, meta, or para position with respect to G;

(b)



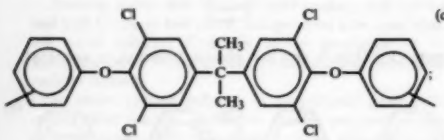
where G is O or S; and R is phenyl, biphenyl, or naphthyl;

(c)



Where G is O or S; and

(d)



with the proviso that Q in at least some of the repeating units has the above formula (d).

4,485,141

POLYOLEFIN FOAMED FIBERS AND PROCESS PRODUCING THE SAME

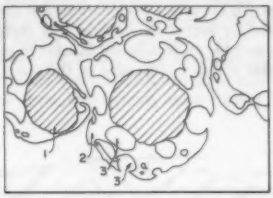
Isao Fujimura, Moriyamashi; Sadaaki Nakajima; Morio Abe, both of Shigaken, and Masahiko Taniguchi, Moriyamashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Feb. 22, 1984, Ser. No. 582,639

Int. Cl.³ D04H *1/58*

U.S. Cl. 428—288 **6 Claims**

1. Polyolefin foamed fibers consisting of composite fibers having a single fiber fineness of 0.5 to 30 deniers and a fiber strength of 1.5 to 5.0 g/d, characterized in a structure wherein only a composite component dominantly forming the fiber surface of composite fibers along the direction of the fiber axis



thereof is substantially foamed and a part of the resulting foamed cells are burst open on the fiber surface.

4,485,142

CHEMICALLY MODIFIED HIGH OIL ASPHALT

Edward R. Harrington, Naperville, Ill.; William E. Uffner, Newark, Ohio, and Richard T. Janicki, Oak Lawn, Ill., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 407,373, Aug. 12, 1982, Pat. No. 4,444,947. This application Dec. 1, 1983, Ser. No. 557,033

Int. Cl.³ B32B *11/02*; C08L *95/00*

U.S. Cl. 428—290 **1 Claim**

1. In a membrane comprising a fibrous reinforcement material coated with an asphaltic composition, the improvement wherein said composition is an asphaltic-based composition which comprises the reaction product of a high oil asphalt, a vinyl aromatic monomer and a homopolymer of a conjugated diene or a copolymer of a conjugated diene with at least one ethylenic monomer copolymerizable therewith, said asphalt being an air blown high oil asphalt having a viscosity factor of greater than about 120.

4,485,143

SILICON CARBIDE MATERIAL FOR LOW-MELTING POINT FUSION METAL

Susumu Inoue, Tokyo; Isao Sakashita, Yamagata; Kazunori Meguro, Yamagata, and Kunio Hamaguchi, Yamagata, all of Japan, assignors to Toshiba Ceramics, Co., Ltd., Japan

Filed Jun. 18, 1982, Ser. No. 390,135

Claims priority, application Japan, Jun. 22, 1981, 56-96336; Jun. 22, 1981, 56-96340

Int. Cl.³ B32B *15/00*

U.S. Cl. 428—334 **8 Claims**

1. A silicon carbide material for low-melting point fusion metal, comprising a body of recrystallization silicon carbide or silicon nitride coupled silicon carbide, containing a total content of free silicon and silicon oxide of less than 5% by weight and coating the surface of said body is a film of vapor phase growth silicon carbide or silicon nitride, wherein a corrosion-resistance heat insulating coating is provided on at least a portion of said film, which is contacted directly with the fused metal.

4,485,144

CHEMICALLY MODIFIED ASPHALTS AND GLASS FIBERS TREATED THEREWITH

William E. Uffner, Newark, and Robert N. White, Etna, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 407,390, Aug. 12, 1982,. This application Feb. 6, 1984, Ser. No. 577,476

Int. Cl.³ C09U *7/02*

U.S. Cl. 428—343 **5 Claims**

1. In a laminate including a membrane comprised of an asphaltic coated fibrous glass reinforcement material and having a pressure sensitive adhesive layer on one side thereof, said fibrous glass material comprising a bundle of a multitude of

individual glass filaments the improvement wherein said coating is a reaction product of asphalt, a vinyl aromatic monomer and a thermoplastic rubber, linear block copolymer of styrene and butadiene having polystyrene end blocks and a polybutadiene mid block and wherein said bundle is impregnated with said composition and wherein said improved coating composition has an increased elastic recovery rate, has increased viscosity stability, is less tacky and has a lower viscosity and improved glass fiber bundle impregnant qualities compared to a coating which is a reaction product of said asphalt, said vinyl aromatic monomer and a rubbery polymer which is a styrene-butadiene copolymer of the A-B type.

4,485,145

CHEMICALLY MODIFIED HIGH OIL ASPHALT

Edward R. Harrington, Naperville, Ill.; William E. Uffner, Newark, Ohio, and Richard T. Janicki, Oak Lawn, Ill., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 407,373, Aug. 12, 1982, Pat. No. 4,444,947. This application Dec. 1, 1983, Ser. No. 557,020

Int. Cl.³ B32B *11/02*; C08L *95/00*

U.S. Cl. 428—378 **1 Claim**

1. Glass fibers having an asphaltic coating which comprises an asphaltic-based composition which comprises the reaction product of a high oil asphalt, a vinyl aromatic monomer and a homopolymer of a conjugated diene or a copolymer of a conjugated diene with at least one ethylenic monomer copolymerizable therewith, said asphalt being an air blown high oil asphalt having a viscosity factor of greater than about 120.

4,485,146

GLASS BODY PROVIDED WITH AN ALKALI DIFFUSION-PREVENTING SILICON OXIDE LAYER

Mamoru Mizuhashi, and Yoshio Gotoh, both of Yokohama, Japan, assignors to Asahi Glass Company Ltd, Tokyo, Japan

Filed Jul. 29, 1982, Ser. No. 403,282

Claims priority, application Japan, Aug. 6, 1981, 56-122421

Int. Cl.³ B32B *9/00*

U.S. Cl. 428—428 **2 Claims**

1. A glass body comprising an alkali-containing glass substrate and a silicon oxide layer formed on its surface for preventing diffusion of alkali metal ions from the glass substrate, wherein the silicon of said silicon oxide layer contains essentially O—Si—O and Si—H bonds and where said hydrogen is bonded to silicon in the amount of 0.01 to 25 molar %.

4,485,147

PROCESS FOR PRODUCING A SINTERED PRODUCT OF COPPER-INFILTRATED IRON-BASE ALLOY AND A TWO-LAYER VALVE SEAT PRODUCED BY THIS PROCESS

Yoshio Nishino, and Seiichi Kirigaya, both of Ohmiya, Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 1, 1983, Ser. No. 528,523

Int. Cl.³ B22F *3/10*; B32B *5/18*

U.S. Cl. 428—550 **11 Claims**

1. A process for producing a sintered product of a copper-infiltrated iron-base alloy comprising the following steps:

(1) preparing two powder mixes, one having a predetermined composition with a powder of infiltrating material containing Cu powder or Cu alloy powder as the primary component, and the other having a predetermined composition without said powder of infiltrating material;

(2) pressing the two powder mixes into a compact having said powder of infiltrating material present locally; and

(3) sintering the compact under ordinary conditions so as to cause the infiltrant to penetrate into the infiltrant-free area simultaneously with the sintering.

4,485,148

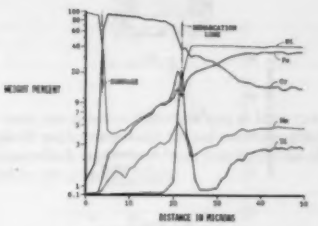
CHROMIUM BORON SURFACED NICKEL-IRON BASE ALLOYS

James M. Rashid, Manchester; Leonard A. Friedrich, and Melvin Freling, both of West Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 8, 1983, Ser. No. 512,297

Int. Cl.³ B32B *5/14*

U.S. Cl. 428—610 **5 Claims**



1. A wear resistant article comprised of a nicle-iron base substrate containing by weight percent 25–45 Ni, 30–50 Fe, at least 10 Cr, an other elements, wherein Co may be substituted for a portion of the Ni, having a diffusion coating of chromium and boron, the coating comprising a chromium layer having a first super-enriched Cr portion near the article surface and a second enriched Cr portion adjacent thereto, the second portion having a lesser concentration of chromium than the first portion, wherein boron is detectable only in the first chromium layer portion.

4. A wear resistant article comprised of a nickel iron base substrate consisting essentially by weight percent of 11–14 Cr, 40–45 Ni, 5–6.5 Mo, 2.6–3.1 Ti, 0.01–0.02 B, 0.02–0.08 C., balance Fe, wherein Co may be substituted for a portion of the Ni, having on its surface a diffusion coating of chromium and boron.

4,485,149

HIGHLY TEMPERATURE-RESISTANT, WEAR-RESISTANT WORKPIECES AND METHOD FOR THEIR MANUFACTURE

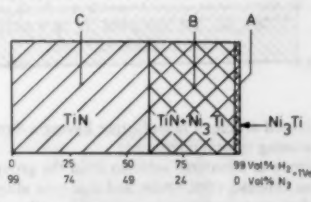
Heinz Sprenger, and Christoph Scholz, both of Munich, Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 22, 1982, Ser. No. 351,147

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1981, 3107217

Int. Cl.³ C23C *11/00*

U.S. Cl. 428—627 **5 Claims**



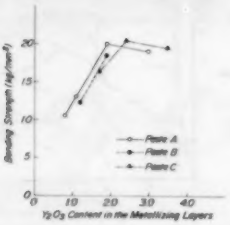
1. A workpiece comprising a core of heat-resistant steel containing nickel or of a nickel-base alloy, at least one hard coating including a titanium compound and intermediate layer consisting of an intermetallic phase Ni_3Ti intervening between the core and the hard coating and intimately associated with the core.

4,485,150

METAL CERAMICS COMPOSITES AND A METHOD FOR PRODUCING SAID COMPOSITES

Nobuo Tsuno, Kasugai, Japan, assignor to NGK Insulators, Ltd., Japan

Filed Aug. 30, 1982, Ser. No. 413,132
Claims priority, application Japan, Dec. 9, 1981, 56-197005
Int. Cl.³ B32B 31/26; B23K 31/02
U.S. Cl. 428—633 8 Claims



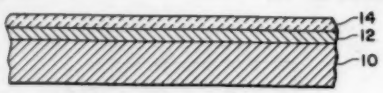
1. Metal ceramic composites having a metal body and a ceramic body bonded together through a bonding layer, said bonding layer being applied on a surface of the ceramic body and provided with a metallizing layer consisting essentially of 70–90% by weight of a metal selected from the group consisting of molybdenum and tungsten, 0.5–15% by weight of manganese oxide, 0.1–10% by weight of yttrium oxide, 0.1–15% by weight of aluminum oxide and 0.1–15% by weight of silicon dioxide.

4,485,151

THERMAL BARRIER COATING SYSTEM

Stephan Stecura, Parma, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 375,784, May 6, 1982, abandoned. This application Aug. 16, 1983, Ser. No. 523,297
Int. Cl.³ C23C 7/00; C23D 5/00; B32B 15/04
U.S. Cl. 428—633 8 Claims



1. A coated article of manufacture having a duplex thermal barrier coating system comprising

a substrate of a material selected from the group consisting of nickel-base, cobalt-base, and iron-base alloys,

a bond coating consisting essentially of an alloy of about 24.9 w/o to about 36.7 w/o chromium, about 5.5 w/o to about 18.5 w/o aluminum, and about 0.05 w/o to about 0.53 w/o ytterbium with a metal selected from the group consisting essentially of nickel, cobalt, and iron, and

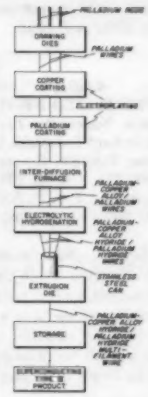
a thermal barrier coating consisting essentially of zirconia partially stabilized with about 6% by weight to about 8% by weight yttria.

4,485,152

SUPERCONDUCTING TYPE II PALLADIUM ALLOY HYDRIDE-PALLADIUM HYDRIDE COMPOSITES

Clarke G. Homan, Schenectady; Wilfried W. Scholz, Latham; William J. Standish, Loudonville, and Andreas Leiberich, Albany, all of N.Y., assignors to Research Foundation, State University of New York, N.Y.

Filed Jun. 18, 1982, Ser. No. 389,679
Int. Cl.³ H01B 1/00
U.S. Cl. 428—670 19 Claims



1. A composite material comprising a current carrying Superconducting Type II pathway having a critical temperature Tc greater than about 9 K. wherein said pathway consists essentially of a substantially contiguous and continuous palladium alloy hydride atom lattice in touch with a palladium hydride atom lattice.

4,485,153

CONDUCTIVE PIGMENT-COATED SURFACES

Daniel S. Janikowski, Lake Geneva, Wis., and Steven A. Bradley, Northbrook, Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 449,968, Dec. 15, 1982,. This application Apr. 30, 1984, Ser. No. 605,452
Int. Cl.³ B06D 3/02
U.S. Cl. 428—688 9 Claims

1. A process for the preparation of a conductive and solderable pigment-coated thick film surface comprising an alloy of a nonnoble conductive metal, at least one oxidizable material and a noble metal composited on an inert surface which comprises the steps of:

(a) admixing nickel or copper in an amount of from about 60% to about 94% by weight of said alloy, an oxidizable material selected from the group consisting of carbon, boron, silicon, aluminum and combinations thereof in an amount in the range of from about 5% to about 25% by weight of said alloy and a noble metal in an amount in the range of from about 1% to about 15% by weight of said alloy to provide a resultant admixture;

(b) arc-melting said admixture formed in step (a) in an inert atmosphere to form an alloy of said components;

(c) grinding said arc-melted alloy of step (b) to a powdered form;

(d) admixing said powder of step (c) with a carrier binder;

(e) depositing said admixture of step (d) on an inert surface;

(f) firing said admixture and surface of step (e) in an oxygen-containing atmosphere at a temperature in the range of from about 500° to about 950° C.;

(g) fluxing the resultant conductive pigment-coated surface with a zinc chloride based flux to provide a solderable

conductive pigment-coated surface and recovering said surface.

4,485,154

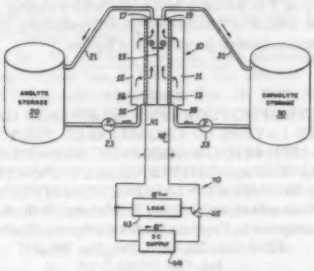
ELECTRICALLY RECHARGEABLE ANIONICALLY ACTIVE REDUCTION-OXIDATION ELECTRICAL STORAGE-SUPPLY SYSTEM

Robert J. Remick, and Peter G. P. Ang, both of Naperville, Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Sep. 8, 1981, Ser. No. 299,977

Int. Cl.³ H01M *8/04, 8/18, 2/38, 4/36*

U.S. Cl. 429—14 **47 Claims**



1. An electrically rechargeble anionically active reduction-oxidation electrical energy storage and supply system comprising:

an electrochemical cell comprising an anolyte compartment and a catholyte compartment separated by an ion selective membrane permeable to positive sodium and potassium ions and substantially impermeable to negative bromide, chloride, iodide, sulfide and polysulfide ions and a first and a second electrode disposed in said anolyte and catholyte compartments, respectively;

anolyte supply means providing anionically active ions in an aqueous solution electrochemically reactable anolyte in contact with said first electrode, said first electrode being substantially chemically non-reactive with said anolyte;

catholyte supply means providing anionically active ions in an aqueous solution electrochemically reactable catholyte in contact with said second electrode, said second electrode being substantially chemically non-reactive with said catholyte;

said anolyte and said catholyte having all active reduction-oxidation couples as anions; and

an external electrical circuit in electrical communication with said first and second electrodes, said electrical circuit comprising an electrical load means and a direct current supply means for applying charging voltage to said electrodes electrically connected in parallel in said circuit between said electrodes, and switching means for electrical circuit selection between said load means, said supply means, and an open circuit.

4,485,155

STORAGE ELEMENT FOR ELECTRICAL ENERGY

Walter Holl, Stuttgart, and Adolf Mandel, Weinstadt, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 28, 1983, Ser. No. 470,473

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1982, 3215126

Int. Cl.³ H01M *6/14*

U.S. Cl. 429—194 **12 Claims**

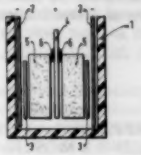
1. An electric energy storage element, comprising

a housing structure;

at least one positive electrode mounted within the housing;

at least one negative electrode mounted within the housing and spaced from said at least one positive electrode; and

an ionic electrolyte in contact with said electrodes;



said at least one positive electrode and at least one negative electrode each comprising an ion pervious graphite having ions which are formed from ions from said electrolyte stored in the graphite lattice.

4,485,156

PASTED TYPE LEAD-ACID BATTERY

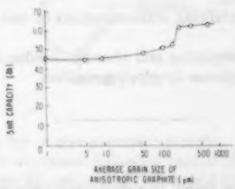
Akio Tokunaga, Kyoto, Japan, assignor to Japan Storage Battery Company Limited, Kyoto, Japan

Filed Apr. 13, 1984, Ser. No. 599,916

Claims priority, application Japan, Oct. 19, 1983, 58-196589

Int. Cl.³ H01M *6/04*

U.S. Cl. 429—204 **5 Claims**



1. A pasted type lead-acid battery comprising positive plates pasted with a paste active lead oxide material containing anisotropic graphite, said graphite having such characteristics that the spacing $d_{(002)}$ of (002) plane is given by $d_{(002)} \simeq 3.35$ Å; the size $Lc_{(002)}$ of crystal in (002) plane is given by $Lc_{(002)} > 100$ Å; and the size $La_{(110)}$ of crystal in (110) plane is given by $La_{(110)} > 100$ Å, and that it has the diffraction line of (112) plane.

4,485,157

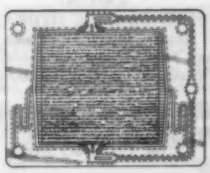
SEPARATOR HAVING DIELECTRIC ELASTOMER IN THE PERIPHERY AREA

Scott A. Moseley, Elmhurst, Ill., assignor to Energy Research Corporation, Danbury, Conn.

Filed Feb. 11, 1983, Ser. No. 465,755

Int. Cl.³ H01M *2/16*

U.S. Cl. 429—251 **6 Claims**



1. A separator for use in a metal-halgon cell comprising:

a polymer sheet material containing a filler, sheet material having a main area and a periphery area, the pores of said sheet material being filled with a dielectric elastomer exclusively in said perphery area, said dielectric elastomer comprising a cured silicone dielectric resin.

4,485,158

METHOD FOR PREPARING A MOSAIC LUMINESCENT SCREEN USING A MOSAIC PRECOATING

Stanley A. Harper, Providence Township, Lancaster County, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 17, 1983, Ser. No. 542,707
Int. Cl.³ G03C *5/00*; B05D *1/36, 7/22*
U.S. Cl. 430—28 **19 Claims**

1. In a method for preparing a mosaic luminescent screen on a glass surface, the steps of

A. adhering islands of a dry precoating to said glass surface at the sites of the mosaic parts of said luminescent screen,

B. depositing over said islands a dry coating comprising phosphor particles and a photoinsolubilizable binder for said particles,

C. photoinsolubilizing defined regions of said coating over said islands

D. and then subjecting said photoinsolubilized regions to a turbulent aqueous developing medium.

4,485,159

LAMINATE TYPE ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Katsunori Watanabe; Shigeto Ohta; Kiyoshi Sakai; Shozo Ishikawa, and Makoto Kitahara, all of Tokyo, Japan, assignors to Copyer Co., Ltd., Canon Inc., Tokyo, Japan

Filed Oct. 23, 1980, Ser. No. 199,878
Claims priority, application Japan, Oct. 23, 1979, 54-135890
Int. Cl.³ G03G *5/14, 5/087*
U.S. Cl. 430—58 **6 Claims**

1. In an electrophotographic light-sensitive material comprising at least one electric charge generation layer comprising a charge generating substance and a binder resin therefor and at least one electric charge transport layer on an electrically conductive base, said electrophotographic light-sensitive material is a laminate type electrophotographic light-sensitive material wherein the binder resin for the electric charge generating substance contains at least one polyvinylpyridine resin.

4,485,160

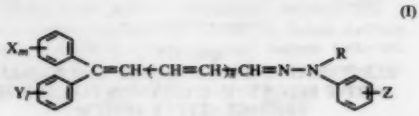
ELECTROPHOTOGRAPHIC HYDRAZONE PLATE

Tetsumi Suzuki, Isehara; Tetsuo Murayama, Machida; Hitoshi Ono, and Shinji Aramaki, both of Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Jun. 29, 1983, Ser. No. 508,904
Claims priority, application Japan, Jul. 16, 1982, 57-124056
Int. Cl.³ G03G *5/06*
U.S. Cl. 430—59 **13 Claims**

1. An electrophotographic plate, comprising:

a photosensitive layer containing a hydrazone compound of formula (I):


(I)

wherein X, Y and Z are each independently hydrogen, a lower alkyl group, a lower alkoxy group, phenoxy or an arylalkoxy group; R is hydrogen, a lower alkyl group, allyl, an aralkyl group or a substituted or unsubstituted phenyl group; m and l are each independently 1 or 2; and n is 0 or 1 in a binder laminated with a charge generating layer which is binderless photoconductive particles or photoconductive particles in a binder.

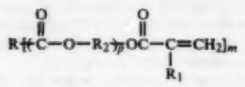
4,485,161

ELECTROPHOTOGRAPHIC ELEMENTS HAVING BARRIER LAYERS OF CROSSLINKED POLYMERS OF ALIPHATIC OR AROMATIC MONOMERS CONTAINING α,β-ETHYLENICALLY UNSATURATED CARBONYL-CONTAINING SUBSTITUENTS

Michael Scozzafava, and Michel F. Molaire, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 20, 1983, Ser. No. 506,247
Int. Cl.³ G03G *5/14*
U.S. Cl. 430—64 **4 Claims**

1. An electrophotographic element comprising a conductive layer, a organic photoconductive layer and a barrier layer between the conductive layer and the photoconductive layer characterized in that the barrier layer is capable of supporting an electric field in excess of 6×10^5 v/cm and comprises a polymerized crosslinked monomer having the structure



wherein

R 15 a cycloaliphatic or aromatic group;

R_1 15 represents hydrogen or alkyl;

R_2 15 alkylene of 1 to 20 carbon atoms, or $—CH_2CH_2(OCH_2CH_2)n$;

p is 0 or 1;

m is 1 to 6; and

n is 1 to 20.

4,485,162

MAGNETIC CARRIER POWDER HAVING A WIDE CHARGEABLE RANGE OF ELECTRIC RESISTANCE USEFUL FOR MAGNETIC BRUSH DEVELOPMENT

Kenji Imamura; Hiroshi Saitoh; Katsuhisa Kakizaki, and Motohiko Makino, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Feb. 8, 1983, Ser. No. 464,929
Claims priority, application Japan, Feb. 12, 1982, 57-20963; Feb. 12, 1982, 57-20964; Feb. 12, 1982, 57-20965
Int. Cl.³ G03G *9/14*
U.S. Cl. 430—106.6 **19 Claims**

1. A magnetic carrier powder comprising particles of a ferrite having a composition represented by the formula

$$(MO)_{100-x}(Fe_2O_3)_x \quad \text{(I)}$$

where M is Mg, Mn, Zn, Ni, a combination of Mg in an atomic ratio of at least 0.05 with at least one metal selected from the group consisting of Zn, Cu, Mn and Co, a combination of Mn in an atomic ratio of at least 0.05 with at least one metal selected from the group consisting of Zn, Cu, Mg and Co, or a

combination of Ni in an atomic ratio of at least 0.05 with at least one metal selected from the group consisting of Zn, Mg, Mn, Cu, and Co, and x is greater than 53 molar %, wherein each magnetic carrier powder composition within the formula is capable of exhibiting a changeable resistance of from 10^4 to $10^{14}\Omega$ when 100 V is applied, and said ferrite particles are free of a resin coating.

4,485,163

ONE-COMPONENT MAGNETIC DRY DEVELOPER COMPRISES TRIIRON TETROXIDE HAVING SPECIFIED COERCIVE FORCE AND VINYL AROMATIC POLYMER AND PROCESS OF USE

Nobuhiro Miyakawa, Suita, Japan, assignor to Mita Industrial Company Limited, Osaka, Japan

Division of Ser. No. 220,098, Dec. 24, 1980, abandoned. This application Jun. 2, 1982, Ser. No. 384,232
Claims priority, application Japan, Dec. 25, 1979, 54-167595
Int. Cl.³ G03G *9/14*
U.S. Cl. 430—122 **5 Claims**

1. An electrostatic photographic reproduction process which comprises contacting a selenium photoconductive substrate carrying a positively charged electrostatic image with a magnetic brush of a one-component magnetic dry developer to effect development of the latent image and electrostatically transfer the formed image of the developer onto a transfer sheet, wherein the one-component magnetic dry developer consists essentially of particles of a composition comprising (A) a finely divided magnetic material composed of triiron tetroxide having a coercive force not larger than 120 Oe, a bulk density of at least 0.45 g/ml and a shape anisotropic characteristic, as defined as the longest size/shortest size ratio, in the range of from 1.0 to 5.5, (B) 0.2 to 4% by weight, based on the amount of the finely divided magnetic material, of an aliphatic carboxylic acid having at least 14 carbon atoms, inclusive of the carbon atom of the carboxyl group, per carboxyl group or a metal salt thereof, and (C) 45 to 95% by weight, based on the amount of the finely divided magnetic material, of a vinyl aromatic polymer containing at least 25% by weight of a vinyl aromatic monomer component.

4,485,164

OXIDANTS FOR REDUCING POST-PROCESS D-MIN INCREASE IN POSITIVE REDOX DYE-RELEASING IMAGE TRANSFER SYSTEMS

Eugene A. Armour, and Jal F. Munshi, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 6, 1983, Ser. No. 511,080
Int. Cl.³ G03C *5/54, 1/40, 7/00*
U.S. Cl. 430—214 **27 Claims**

1. In a photographic element to be processed with an electron transfer agent, said element comprising a support having thereon the following layers, in order, a dye image-receiving layer, an opaque layer and at least one photosensitive silver halide emulsion layer having associated therewith a positive-working, nondiffusible redox dye-releaser capable of releasing a diffusible dye upon reduction,

the improvement wherein said photographic element contains an oxidant which is located between said dye image-receiving layer on said support and the photosensitive portion of said photographic element, said oxidant having an electrode potential of from about −200 mV up to about +1200 mV versus a saturated calomel electrode at a pH of about 5 to about 6, said oxidant being capable of oxidizing said electron transfer agent after processing and being initially present in said element as an oxidant, and the reduced form of said oxidant being substantially incapable of reducing said positive-working redox dye-releaser.

3. The element of claim 1 wherein said oxidant is an inorganic salt, a quinone compound, a peroxy acid compound or a positive halogen compound.

4,485,165

PHOTOGRAPHIC ELEMENTS AND PROCESSES FOR PROVIDING A MONOCHROMATIC DYE IMAGE

Robert G. Finn, and Charles D. DeBoer, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 15, 1984, Ser. No. 580,400
Int. Cl.³ G03C *5/54, 1/90, 1/40*
U.S. Cl. 430—223 **23 Claims**

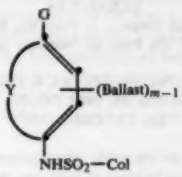
1. A photographic assemblage comprising:

(a) a photosensitive element comprising a support having thereon the following layers in sequence: a layer comprising at least one nondiffusible dye image-providing material which is capable of forming or releasing a diffusible dye, a stripping layer, a substantially opaque layer and a photosensitive silver halide emulsion layer;

(b) a transparent cover sheet superposed over said silver halide emulsion layer; and

(c) an opaque alkaline processing composition and means containing same for discharge, during processing, between said cover sheet and said photosensitive element.

8. The assemblage of claim 1 wherein said nondiffusible dye image-providing material is a ballasted sulfonamido compound which is alkalicleavable upon oxidation to release a diffusible color-providing moiety, said compound having the formula:



wherein:

(a) Col is a dye or dye precursor moiety;

(b) Ballast is an organic ballasting radical of such molecular size and configuration as to render said compound nondiffusible in said photosensitive element during development in said alkaline processing composition;

(c) G is OR or NHR^1 wherein R is hydrogen or a hydrolyzable moiety and R^1 is hydrogen or an alkyl group of 1 to 22 carbon atoms;

(d) Y represents the atoms necessary to complete a benzene nucleus, a naphthalene nucleus or a 5- to 7-membered heterocyclic ring; and

(e) m is a positive integer of 1 to 2 and is 2 when G is OR or when R^1 is hydrogen or an alkyl group of less than 8 carbon atoms.

9. The assemblage of claim 8 wherein

(a) said support is transparent,

(b) said cover sheet has thereon a dye mordant layer,

(c) two nondiffusible dye image-providing materials are present wherein one said Col is a magenta dye and another said Col is a cyan dye, and

(d) said silver halide emulsion is panchromatically sensitized and negative-working.

4,485,166

RADIATION-POLYMERIZABLE MIXTURE AND PHOTOPOLYMERIZABLE COPYING MATERIAL PREPARED THEREFROM

Walter Herwig, Bad Soden; Rudolf Decker, Bodenheim; Helga Sikora, Wiesbaden, and Kurt Erbes, Floersheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 7, 1982, Ser. No. 366,379
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1981, 3114931
Int. Cl.³ G03C *1/68, 1/76*
U.S. Cl. 430—260 **31 Claims**

1. A radiation-polymerizable mixture comprising:

(a) a compound which has at least two terminal ethylenically unsaturated groups and which can form a crosslinked polymer by means of free radical initiated chain addition polymerization,
(b) a polymeric binder insoluble in water and soluble in aqueous-alkaline solutions,
(c) a radiation-activatable polymerization initiator, and
(d) a compound having two epoxy groups in the molecule and a molecular weight of not more than 1,500.

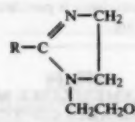
26. A photopolymerizable copying material comprising a flexible transparent temporary support and a transferrable thermoplastic photopolymerizable layer; said photopolymerizable layer comprising:
(a) a compound having at least two terminal ethylenically unsaturated groups which can form a crosslinked polymer by free radical initiated chain addition polymerization;
(b) a polymeric binder insoluble in water and soluble in aqueous-alkaline solutions;
(c) a photopolymerizable initiator; and
(d) a compound having two epoxy groups in the molecule and a molecular weight of not more than 1,500.

4,485,167
AQUEOUS DEVELOPABLE PHOTOPOLYMERIZABLE ELEMENTS

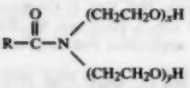
Gary C. Briney, and Stephen J. Fuerniss, both of Sayre, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 193,919, Oct. 6, 1980, abandoned. This application Jun. 28, 1982, Ser. No. 392,795
Int. Cl.³ G03B *1/68*
U.S. Cl. 430—281 **6 Claims**

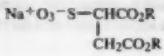
1. An aqueous developable photopolymerizable element comprising a support bearing at least one layer of a photopolymerizable composition consisting essentially of
(a) at least one nongaseous ethylenically unsaturated compound capable of forming a high polymer by free-radical initiated chain propagating addition polymerization;
(b) at least one organic acid polymeric binder soluble in solely aqueous alkaline solvent devoid of organic solvents;
(c) an organic, radiation-sensitive, free-radical generating photoinitiator or photoinitiator system taken from the class consisting of polynuclear quinones, vicinal ketaldonyl alcohols, acyloin ethers, alpha-hydrocarbon-substituted aromatic acyloins, photoreducible dyes and reducing agents including dyes of the phenazine, oxazine and quinone classes, Michler's ketone, benzophenone, 2,4,5-triphenyl-imidazolyl dimers with hydrogen donors, and mixtures, and
(d) at least 4.0% by weight based on the weight of solids in the photopolymerizable composition of an organic compound or salt of an organic compound taken from the group consisting of
(1)



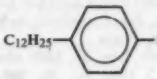
wherein R is an alkyl chain with 7 to 17 carbon atoms
(2)



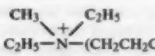
wherein R is $CH_3(CH_2)_7CH{=}CH(CH_2)_8{-}$, or a mixture of alkyl chains with 16 and 18 carbon atoms and $CH_3(CH_2)_7CH{=}CH(CH_2)_8{-}$, and x+y is 2 to 10;
(3)



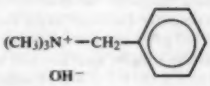
wherein R is a straight or branched alkyl chain of 8 to 13 carbon atoms;
(4)



wherein R is an alkyl chain with 1 to 9 carbon atoms;
(5)



wherein n is 10 to 50;
(6)

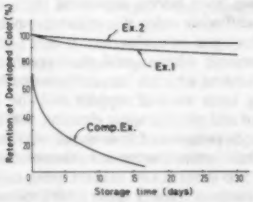


(7) $C_{16}H_{33}N(CH_3)_3{}^+Br^-$;
(8) RNH $CH_2CH_2COO^-Na^+$ wherein R is an alkyl group derived from coconut oil; and combinations thereof.

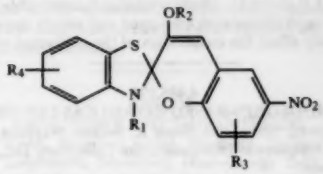
4,485,168
PHOTOCHROMIC PHOTOSENSITIVE COMPOSITION

Seiichi Arakawa, Chigasaki; Koichi Kawasumi, and Junetsu Seto, both of Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP82/00345, § 371 Date Apr. 21, 1983, § 102(e) Date Apr. 21, 1983, PCT Pub. No. WO83/00873, PCT Pub. Date Mar. 17, 1983
PCT Filed Aug. 28, 1982, Ser. No. 502,017
Claims priority, application Japan, Aug. 28, 1981, 56-135059
Int. Cl.³ G03C *1/733*
U.S. Cl. 430—345 **4 Claims**



1. A photosensitive composition capable of producing a colored image by exposure to ultraviolet radiation, said image being stable to heat, consisting essentially of a photochromic spiropyran compound having the following formula:



where R, represents an alkyl group containing 1 to 10 carbon atoms, R_2 represents an alkyl group containing 1 to 10 carbon atoms or a phenyl group, R_3 represents a hydrogen atom, a halogen atom, a methoxy group or an alkyl group containing 1 to 5 carbon atoms and R_4 represents a hydrogen atom, an alkyl group containing 1 to 5 carbon atoms, a methoxy group or a methylthio group, said spiropyran compound being dispersed in a mixture of bisphenol A type polyether resin and a phenol, said spiropyran compound being present in an amount ranging from 3 to 60 parts by weight per 100 parts by weight of said bisphenol A type resin, wherein said phenol is contained at a weight ratio of 1/10 to 2 relative to said spiropyran compound.

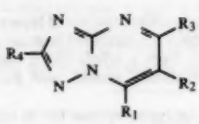
4,485,169

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

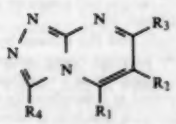
Shoji Ishiguro; Tetsuro Kojima, and Akio Mitsui, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 8, 1983, Ser. No. 473,307
Claims priority, application Japan, Mar. 8, 1982, 57/36104
Int. Cl.³ G03C *1/34*
U.S. Cl. 430—615 **15 Claims**

1. A silver halide photographic light-sensitive material comprising a base and a silver halide emulsion layer; and a compound in an amount sufficient to prevent latent image fading represented by the formulae (1) or (II):

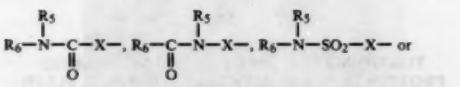


(I)

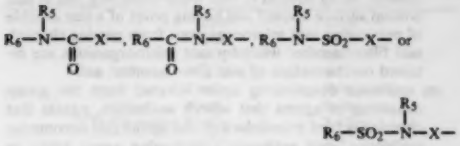


(II)

wherein R_1, R_2, and R_3 and R_4 each represents a hydrogen atom, a hydroxyl group, an alkyl group, an alkenyl group, an aralkyl group, an aryl group, an alkylthio group, an arylthio group, a mercapto group, an alkoxy group, an aryloxy group, an alkylamino group, an arylamino group, an alkoxycarbonyl group, an amino group, a halogen atom, a cyano group,



wherein X represents an alkylene divalent bonding group, and R_5 and R_6 each represents a hydrogen atom, an alkyl group, an alkenyl group, an aralkyl group, an aryl group or a heterocyclic group, in proviso that at least one of R_1 to R_4 represents a hydroxyl group and at least one of R_1 to R_4 not represented by said hydroxyl group represents



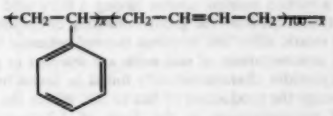
4,485,170

PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE MATERIAL

Yasuo Takahashi; Takashi Fujioka, and Yasuhiro Nakayama, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 10, 1983, Ser. No. 465,372
Claims priority, application Japan, Feb. 10, 1982, 57-20049
Int. Cl.³ G03C *1/72*
U.S. Cl. 430—627 **6 Claims**

1. A photographic silver halide light-sensitive material comprising a support having coated thereon at least one gelatin-containing hydrophilic silver halide emulsion layer wherein said gelatin-containing hydrophilic silver halide emulsion layer contains gelatin as a binder and a styrene-butadiene copolymer latex; wherein said styrene-butadiene copolymer latex comprises a styrene-butadiene copolymer represented by the following formula:



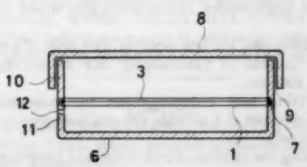
wherein x is 1 to 45% by weight and wherein the styrene-butadiene copolymer latex is present in a solid amount of 5 to 60% by weight based on the weight of the gelatin contained in the layer to which the latex is to be added.

4,485,171

MULTI-LAYER MICROORGANISM CULTURE TESTING APPARATUS

Tatsuhiko Ikeda, Kawasaki; Takeshi Igarashi, Tama, and Atsushi Shimizu, Tokyo, all of Japan, assignors to Terumo Corporation, Tokyo, Japan

Filed Sep. 10, 1982, Ser. No. 416,594
Claims priority, application Japan, Oct. 13, 1981, 56-162999
Int. Cl.³ C12M *1/22*; C12Q *1/24, 1/04*
U.S. Cl. 435—30 **26 Claims**



1. A sterilized multi-layer microorganism culture pad assembly for use in determining the presence of microorganisms in a liquid sample comprising:

a water-absorbing pad containing a dried culture medium for culturing said microorganisms;

a filter member having a top and bottom surface, said filter member being bonded to said water-absorbing pad at said bottom surface thereof and having pores of a size capable of preventing said microorganisms from passing through said filter member whereby said microorganisms are retained on the surface of said filter member; and

an antibiotic deactivating agent selected from the group consisting of agents that adsorb antibiotics, agents that chemically bind to antiobiotics and agents that decompose antibiotics, said antibiotic deactivating agent being in contact with at one of said top and bottom surfaces of said filter member.

4,485,172

MULTISTAGE PROCESS FOR THE PREPARATION OF FATS AND OILS

Dennis L. Gierhart, Linden, N.J., assignor to CPC International Inc., Englewood Cliffs, N.J.

Continuation of Ser. No. 227,023, Jan. 19, 1981, abandoned. This application Sep. 10, 1982, Ser. No. 416,745

Int. Cl.³ C12P *7/64*

U.S. Cl. 435—134 **13 Claims**

1. A process for the production of fats and oils comprising the steps of:

(a) cultivating a microorganism capable of synthesizing fats or oils in a suitable growth medium containing a source of assimilable nitrogen and a source of assimilable carbon with the ratio of nitrogen to carbon being such that the microorganism is grown in its logarithmic phase,

(b) harvesting the microorganism thus grown, and

(c) cultivating the cells of said microorganism in a lipid accumulation medium in the form of an emulsion comprising a carbon nutrient source having a fatty acid component, selected from the group consisting of palmitic, oleic and stearic acids and mixtures thereof, wherein the relative concentrations of said acids are selected to produce triglycerides characteristically found in cocoa butter, to promote the production of fats or oils within the cells of said microorganism in the form of 1,3-disaturated-2-unsaturated triglycerides characteristically found in cocoa butter.

4,485,173

PREPARATION OF FATS AND OILS

Dennis L. Gierhart, Linden, N.J., assignor to CPC International Inc., Englewood Cliffs, N.J.

Continuation of Ser. No. 227,022, Jan. 19, 1981, abandoned. This application Sep. 20, 1982, Ser. No. 420,462

Int. Cl.³ C12P *7/64*

U.S. Cl. 435—134 **12 Claims**

7. A process for the microbiological production of fats and oils comprising:

(a) preparing a suitable growth medium in an emulsion form comprising a carbon nutrient source having a fatty acid component, selected from the group consisting of palmitic, oleic and stearic acids and mixtures thereof, wherein the relative concentrations of said acids are selected to produce triglycerides characteristically found in cocoa butter,

(b) inoculating said growth medium with cells of a microorganism capable of synthesizing fats or oils from the growth medium,

(c) cultivating said microorganism by maintaining the growth medium at a suitable pH and temperature to promote growth,

(d) separating the cultivated cells from said growth medium, and

(e) recovering the fat or oil in the form of 1,3-disaturated-2-unsaturated triglycerides characteristically found in cocoa butter from the cultivated cells, wherein said fatty acid component is present in the growth medium in the form of an homogenized emulsion employing an emulsifier having an HLB above 15, which emulsifier is compatible with the fatty acid component employed and which does not adversely affect the metabolism of the cultivated cells.

4,485,174

HEMOGLOBIN-BASED BLOOD GAS CONTROL

Ching Chiang, Acton, and Susan K. Bolton, Wayland, both of Mass., assignors to Instrumentation Laboratory Inc., Lexington, Mass.

Filed Sep. 29, 1982, Ser. No. 427,470

Int. Cl.³ C12Q *1/32*; G01N *33/96, 33/72*

U.S. Cl. 436—11 **15 Claims**

1. A control liquid having known pH, pCO_2, and pO_2 for a blood gas analyzer or the like comprising

hemoglobin,

a pH buffering agent, and

a reduced pyridine nucleotide capable of participating in a reaction which reduces methemoglobin to normal hemoglobin.

4,485,175

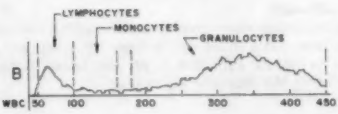
METHOD FOR THREE-VOLUME DIFFERENTIAL DETERMINATION OF LYMPHOCYTE, MONOCYTE AND GRANULOCYTE POPULATIONS OF LEUKOCYTES

Stephen L. Ledis, Hialeah; Ted Sena, Miami; Harold R. Crews, Pembroke Pines, and James H. Carter, II, Ft. Lauderdale, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Jan. 3, 1983, Ser. No. 454,926

Int. Cl.³ G01N *33/48, 33/72*

U.S. Cl. 436—63 **21 Claims**



1. A method for the volumetric differentiation of leukocytes into at least two populations which are identified as monocytes and granulocytes, respectively, from a whole blood sample, using an automatic particle analyzing system, said method comprising the steps of:

I. supplying, for use by the analyzing system for its mixing and analyzing, the whole blood sample and a volume of an isotonically balanced blood diluent; and

II. mixing the whole blood sample and the diluent by the analyzing system with a therein supplied lysing reagent in such a manner that the lysing reagent is at a significantly weak concentration and is supplied at a significantly slow rate, so as to subject the leukocytes to a low gradient of lytic shock, so as to result in the volumetric modification of the individual blood cells of at least one of the populations of leukocytes for a significant period of time to thereby enable the automatic differentiation of the leukocyte populations by the analyzing system;

the lysing reagent comprising a mixture of an aqueous solution of quaternary ammonium salts having surface acting properties.

4,485,176

TURBIDIMETRIC METHOD FOR MEASURING PROTEIN IN URINE AND CEREBROSPINAL FLUID

Ernest Bollin, Jr., Bear, and Richard S. Schifreen, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Jun. 28, 1982, Ser. No. 392,784

Int. Cl.³ G01N *33/68*

U.S. Cl. 436—86 **3 Claims**

1. A method for measuring protein levels in urine or cerebrospinal fluid comprising the steps of mixing urine or cerebrospi-

nal fluid, a base, EDTA and a nonionic surfactant, incubating the mixture for 20 seconds-4 minutes, adding benzethonium chloride in a concentration range of 4–13 mmol/L and measuring the resulting turbidity.

4,485,177

CREATININE SPECIFIC ANTIBODY

Joachim Siedel, Bernried; Ulrich Neumann, Peissenberg; Joachim Ziegenhorn, Starnberg; Hans-George Batz; Helmut Lenz, both of Tutzing; Brigitte Pautz, Herrsching, and Winfried Albert, Pähl, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Aug. 27, 1982, Ser. No. 412,411

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1981, 3134787

Int. Cl.³ G01N *33/54*; A61K *39/00*; C07G *7/00*

U.S. Cl. 436—547 **2 Claims**

1. A purified creatinine specific antibody which forms a hapten-antibody complex with creatinine.

4,485,178

PHOTOTROPIC GLASS WITH A BROWN TINT IN THE IRRADIATED STATE

Georg Gliemeroth; Uwe Eichhorn; Eva Hölzel, all of Mainz-Finthen; Ludwig Ross, Klein-Winternheim; Hans-Georg Krolla, Mainz; Burkhard Speit, Mainz-Mombach; Volkmar Geiler, and Hans-Jürgen Hoffmann, both of Mainz-Finthen, all of Fed. Rep. of Germany, assignors to Schott-Glaswerke, Mainz, Fed. Rep. of Germany

Filed May 31, 1983, Ser. No. 499,684

Claims priority, application Fed. Rep. of Germany, May 29, 1982, 3220367

Int. Cl.³ C03C *3/26*

U.S. Cl. 501—13 **16 Claims**

1. In a phototropic glass whose phototropism is based on precipitates of silver-halide, the improvement wherein the glass further contains at least 0.001 wt% and lower than 0.50 wt% of TeO_2, Yb_2O_3 or a mixture thereof, whereby the glass is weakly tinted or colorless in the non-irradiated state and has a brown tint in the irradiated state.

4,485,179

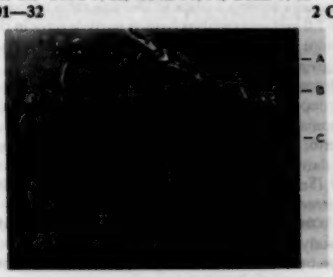
REACTION INHIBITED-SILICON CARBIDE FIBER REINFORCED HIGH TEMPERATURE GLASS-CERAMIC COMPOSITES

John J. Brennan, Portland, Conn.; Kenneth Chyung, and Mark P. Taylor, both of Painted Post, N.Y., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 20, 1982, Ser. No. 380,458

Int. Cl.³ C03C *3/22*; C04B *35/56*; B32B *5/02*

U.S. Cl. 501—32 **2 Claims**



1. A silicon carbide fiber reinforced glass-ceramic composite exhibiting use temperatures in excess of 1000° C. consisting essentially of about 15% to about 70% by volume silicon carbide fibers implanted within a glass-ceramic matrix consisting essentially of, expressed in terms of weight percent on the oxide basis, about

Li_2O	1.5–5
Al_2O_3	15–25
SiO_2	60–75
As_2O_3	0.5–3
Ta_2O_5	0–10
Nb_2O_5	0–10
Ta_2O_5 and/or Nb_2O_5	1–10
ZrO_2	1–3
MgO	0–10

said fibers having a reaction-inhibiting, diffusion barrier coating of niobium carbide and/or tantalum carbide thereon.

4,485,180

HIGH FREQUENCY DIELECTRIC CERAMIC COMPOSITIONS

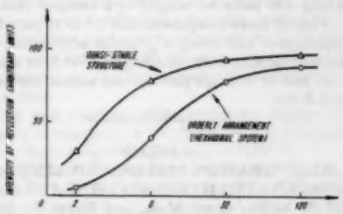
Takehiro Konoike, and Hiroshi Tamura, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

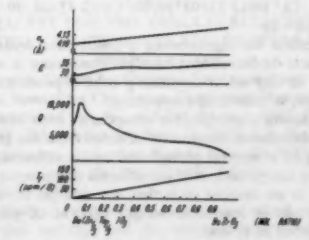
Filed Aug. 30, 1983, Ser. No. 527,762

Claims priority, application Japan, Sep. 6, 1982, 57-155655; Feb. 9, 1983, 58-20367

Int. Cl.³ C04B *35/00*

U.S. Cl. 501—135 **3 Claims**





1. A high frequency dielectric ceramic composition, said composition being represented by the formula: $Ba(Zr_xZn_yTa_z)O_{7/2-x/2-3y/2}$, wherein $0.02 \leq x \leq 0.13$, $0.28 \leq y \leq 0.33$ and $0.59 \leq z \leq 0.65$ (where $x+y+z=1$), said composition having a Q value significantly enhanced by the inclusion of Zr.

4,485,181

DIELECTRIC CERAMIC COMPOSITION

Yukio Sakabe, Kyoto, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Jun. 16, 1983, Ser. No. 504,972

Claims priority, application Japan, Jul. 8, 1982, 57-119476

Int. Cl.³ C04B *35/46*

U.S. Cl. 501—136 **3 Claims**

1. A dielectric ceramic composition having a sintering tem-

perature ranging from 1050° C. to 1160° C. comprising $PbTiO_3$, $SrTiO_3$, $CaTiO_3$, $MgTiO_3$, TiO_2, Bi_2O_3, ZnO, Nb_2O_5, CeO_2 and Al_2O_3, wherein each constituent is present in the following amounts by weight:

$PbTiO_3$	33% to 40%
$SrTiO_3$	6% to 35%
$CaTiO_3$	3% to 18%
$MgTiO_3$	0.5% to 10%
Bi_2O_3	6% to 26%
TiO_2	3% to 15%
ZnO	0.2% to 4%
Nb_2O_5	0.2% to 5%
CeO_2	0.1% to 4%
Al_2O_3	0.1% TO 2%

4,485,182

POWDER COMPOSITION FOR PRODUCING SINTERED CERAMIC

Ryo Enomoto, and Kiyotaka Tsukada, both of Oogaki, Japan, assignors to Ibiden Kabushiki Kaisha, Oogaki, Japan

Filed Jul. 25, 1983, Ser. No. 516,760

Claims priority, application Japan, Jul. 28, 1982, 57-130416; Sep. 28, 1982, 57-167499

Int. Cl.[3] **C04B** *35/00*

U.S. Cl. 501—151 **6 Claims**

1. A powder composition for producing sintered ceramic comprising 100 parts by weight of a ceramic powder composed of one or more components and 0.5 to 15 parts by weight of a fluororesin, and being a granular preparation having a powder bulk density corresponding to 5–46% of the theoretical value and an average particle size within the range from 0.02 to 0.8 mm.

4,485,183

REGENERATION AND REACTIVATION OF DEACTIVATED HYDROREFINING CATALYST

Richard B. Miller, Costa Mesa, and Ryden L. Richardson, Whittier, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Apr. 12, 1982, Ser. No. 367,367

Int. Cl.[3] **B01J** *23/94, 27/04;* **C10G** *45/08, 49/04*

U.S. Cl. 502—25 **24 Claims**

1. A method for regenerating a deactivated hydrorefining catalyst, said hydrorefining catalyst containing a refractory oxide and having sulfur-containing coke deposits on the surface thereof, said method comprising:

(1) contacting a phosphorus component with said catalyst, said phosphorus component selected from the group consisting of elemental phosphorus and a nonmetallic phosphorus compound, said phosphorus component incorporated in an amount such that the catalyst from step (2) comprises at least one weight percent of phosphorus, calculated as P; and

(2) combusting said coke deposits from said catalyst obtained from step (1) such that no significant sulfation of said refractory oxide occurs.

22. A method for regenerating a deactivated hydrorefining catalyst useful for hydrodesulfurization, said catalyst comprising cobalt and molybdenum components on a refractory oxide containing alumina, said catalyst further containing nickel and vanadium metal contaminants and sulfur-containing coke deposits on the surface thereof, which method comprises:

(1) extracting vanadium and nickel components from said deactivated catalyst by contacting said deactivated catalyst with an extraction solution containing components selected from the group consisting of oxalic acid, aluminum nitrate, glycolic acid, and ammonium nitrate;

(2) combusting part of said coke deposit from the catalyst obtained from step (1) by heating said catalyst to a temperature in the range from about 350° F. to about 550° F.;

(3) incorporating cobalt, molybdenum, and phosphorus components with said catalyst obtained from step (2), said phosphorus component being incorporated in an amount sufficient to yield essentially no loss of surface area of said catalyst in step (4);

(4) calcining said catalyst obtained from step (3) at a temperature in the range from about 700° F. to about 1300° F. such that a substantial proportion of said coke deposits are combusted from said catalyst without substantial loss in surface area thereof;

(5) crushing said catalyst obtained from step (4) and mixing said crushed catalyst with alumina; and

(6) forming said mixture obtained from step (5) into particulates and calcining.

24. The method defined in claim 22 wherein said phosphorus component is in an atom ratio from about 0.1 to about 4 to 1, phosphorus to vanadium.

4,485,184

TRAPPING OF METALS DEPOSITED ON CATALYTIC MATERIALS DURING CARBOMETALLIC OIL CONVERSION

William P. Hettinger, Jr.; H. Wayne Beck, both of Russell; James D. Carruthers, Catlettsburg; Edward B. Cornelius; Stephen M. Kovach, both of Ashland, and James L. Palmer, Flatwoods, all of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 252,967, Apr. 10, 1981,. This application May 10, 1983, Ser. No. 492,153

Int. Cl.[3] **B01J** *29/08, 29/18*

U.S. Cl. 502—67 **9 Claims**

1. A catalyst for the conversion to lighter products of hydrocarbon oil feeds which have significant content of metals comprising vanadium, said catalyst comprising particles each containing in combination:

(a) from 10 to about 50 wt% of a matrix material selected from silica, silica-alumina and kaolin clay and combinations thereof;

(b) from 10 to about 40% by weight of a catalytically active crystalline aluminosilicate zeolite said zeolite being a faujasite having a silica to alumina ratio of from about 2.5 to 7.0 and said catalyst having particle sizes in the range of about 10 to 200 micron, and having a MAT value of at least about 60 vol% conversion;

(c) from 1 to about 40% of a sacrificial trap selected from a group consisting of 5A molecular sieve, mordenite, ammonia exchange A sieve, in the hydrogen or ammonium form, chabazite in the hydrogen or ammonium form, pillared interlayered clay, erionite, and derivates thereof in the hydrogen or ammonium form, and combinations thereof; and

(d) 5,00[illegible] to 30,000 ppm of vanadium equilibrated onto said catalyst;

whereby said sacrificial trap is present in amount sufficient to provide a sacrificial trap to vanadium weight ratio of above about 10:1 when said catalyst is contaminated with about 5,000 ppm by weight of vanadium and wherein all quantities are based on the total weight of the catalyst excluding the metal contamination.

4,485,185

CATALYST COMPOSITION

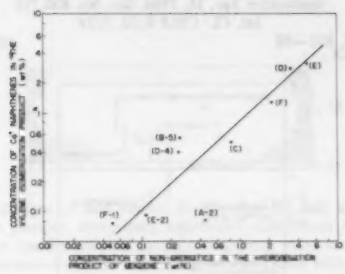
Tamio Onodera; Tokuji Sakai; Yasuo Yamasaki, and Koji Sumitani, all of Matsuyama, Japan, assignors to Teijin Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 307,435, Oct. 1, 1981, abandoned, which is a continuation-in-part of Ser. No. 133,793, Mar. 25, 1980, Pat. No. 4,331,822. This application Sep. 15, 1983, Ser. No. 532,305

Claims priority, application Japan, Mar. 29, 1979, 54-36269

Int. Cl.³ B01J *29/32*

U.S. Cl. 502—71 20 Claims



1. A catalyst composition comprising

(i) a crystalline aluminosilicate selected from the group consisting of zeolite ZSM-5, zeolite ZSM-11, zeolite ZSM-12, zeolite ZSM-35 and zeolite ZSM-38 and having a silica/alumina mole ratio of 20 to 1,000; and

(ii) at least two metals which are

(a) platinum and

(b) at least one other metal selected from the group consisting of titanium, barium, and lanthanum.

2. The composition of claim 1 wherein the amount of platinum is 0.001 to 2% by weight based on the weight of the aluminosilicate.

14. The composition of claim 1 which further comprises a refractory inorganic oxide as a binder.

4,485,186

CATALYST COMPONENT FOR POLYMERIZATION OF OLEFINS

Hiroshi Ueno; Tadanao Kohara; Takeshi Nomura; Kouji Maruyama; Naomi Inaba, and Makota Yoda, all of Saitama, Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1982, Ser. No. 418,500

Claims priority, application Japan, Sep. 29, 1981, 56-152993

Int. Cl.³ C08F *4/64*

U.S. Cl. 502—128 21 Claims

1. A catalyst component for use in the polymerization of olefins which is obtained by contacting a magnesium compound represented by the formula Mg(OR)(OR'), a halogenated hydrocarbon having 2 or more carbon atoms selected from the group consisting of mono or polyhalogen substituted compound of saturated aliphatic or alicyclic hydrocarbons and a titanium compound, wherein R and R' are alkyl, alkenyl, cycloalkyl, aryl and aralkyl groups and R and R' may be the same or different.

4,485,187

PROCESS FOR PRODUCING ETHYLENE POLYMERS

Takeshi Nomura; Kouji Maruyama; Hiroshi Ueno; Naomi Inaba, and Makota Yoda, all of Saitama, Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1982, Ser. No. 418,499

Claims priority, application Japan, Sep. 29, 1981, 56-152992

Int. Cl.³ C08F *4/64*

U.S. Cl. 502—134 4 Claims

1. A catalyst component for the polymerization of ethylene and copolymerization of ethylene with an α-olefin having from 3 to 10 carbon atoms comprising titanium tetrahalide contacted with a solid component comprising copulverized (A) magnesium halide and (B) a magnesium compound represented by the formula Mg(OR)(OR') wherein R and R' are an alkyl, alkenyl, cycloalkyl, aryl and aralkyl groups having from 1 to 20 carbon atoms, R and R' being the same or different, the molar ratio of B/A being 0.5 to 1.5, the ratio of solid component and titanium tetrahalide being in the range of 1:1-5 on a gram mol basis.

4,485,188

PREPARATION OF POLYMETALLIC CATALYSTS

David G. Brignac, Hester, and George A. Swan, Baton Rouge, both of La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed May 31, 1983, Ser. No. 499,207

Int. Cl.³ B01J *27/02*; C10G *35/06*

U.S. Cl. 502—215 5 Claims

1. A process for the pretreatment and activation of an unsulfided platinum-rhenium-tellurium reforming catalyst for use in reforming a naphtha feed which comprises the steps of

contacting said catalyst with an oxygen-containing gas at temperatures ranging from about 850° F. to about 1100° F., and then

contacting said rhenium oxide-containing catalyst with a stream of substantially dry hydrogen gas at a temperature ranging from about 900° F. to about 1050° F.,

maintaining contact between said dry hydrogen gas and said catalyst for at least 2 hours, or until the moisture level of the gas stream leaving said catalyst is less than about 1000 ppm by volume.

4,485,189

CATALYST FOR THE DESULFURIZATION OF INDUSTRIAL WASTE GASES AND PROCESS FOR ITS PREPARATION

Thierry Dupin, Garges les Gonesse, France, assignor to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Continuation of Ser. No. 353,219, Mar. 1, 1982, Pat. No. 4,422,958. This application Nov. 21, 1983, Ser. No. 553,687

Claims priority, application France, Mar. 13, 1981, 81 05029

Int. Cl.³ B01J *21/06, 27/02*

U.S. Cl. 502—217 24 Claims

1. A catalyst composition having enhanced mechanical strength and activity, and displaying marked resistance to sulfation, consisting essentially of (i) titanium dioxide, (ii) the sulfate of calcium, barium, strontium or magnesium, and (iii) up to about 30% by weight of silica, alumina, clays, silicates, titanium sulfate, or ceramic fibers.

4,485,190

PROCESS FOR PREPARING AN OXIDATION CATALYST

Fawzy G. Sherif, Stony Point, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 2, 1980, Ser. No. 136,585

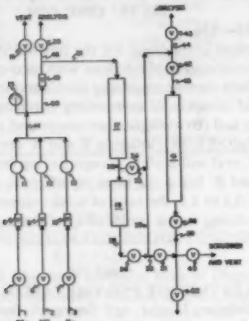
Int. Cl.³ B01J *27/02*; C01B *17/68*

U.S. Cl. 502—243 1 Claim

1. A process for preparing a catalyst for the oxidation of sulfur dioxide which comprises the steps of:

(a) intimately contacting a siliceous support with a mixture comprising a solution of vanadium (V) pentoxide dis-

solved in potassium (K) hydroxide to provide a K/V molar ratio between about 2.5 and about 4.0, dissolved gaseous sulfur dioxide, a sufficient amount of a water-soluble sodium (Na) salt of an acid having a pKa between about 3 and about 7 to provide a K/Na molar ratio between about 4 and about 8, and water, the mixture being



brought to a pH of about 9 to about 11 before impregnation, to form an impregnated support;

(b) drying the impregnated support; and

(c) calcining the dried impregnated support thus providing a catalyst with high durability and high catalytic activity with an alpha-cristobalite content between from about 1 to about 30 percent.

4,485,191

CATALYSTS FOR CONVERTING REDUCTIVE AND OXIDATIVE GASES IN EXHAUST GASES INTO INNOXIOUS GASES

Satoshi Sekido, Yawata; Hirokazu Tachibana, Fushimi, and Yoshito Ninomiya, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 11, 1983, Ser. No. 474,339

Claims priority, application Japan, Mar. 12, 1982, 57-39797

Int. Cl.³ B01J *23/10, 23/78, 23/84, 23/86*

U.S. Cl. 502—303 **12 Claims**

1. A catalyst for the conversion of reductive and oxidative gases in exhaust gases into innoxious gases, said catalyst essentially consisting of a perovskite oxide represented by the general formula

$$La_{(1-x)/2}Sr_{(1+x)/2}Co_{1-x}Me_xO_3$$

in which Me is an element selected from the group consisting of Fe, Mn, Cr, V and Ti and x is a number of from 0.15 to 0.90.

4,485,192

PLASTISOL SEALING GASKETS PUFFED WITH HOLLOW DISCRETE SPHERES

David A. Gibbs, Waban; Robert H. Hofeldt, Littleton, and Charles A. Billings, Concord, all of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Continuation-in-part of Ser. No. 433,585, Oct. 12, 1982, abandoned, and a continuation-in-part of Ser. No. 328,968, Dec. 9, 1981, abandoned. This application Jun. 14, 1983, Ser. No. 504,186

Int. Cl.³ C08J *9/32, 9/36*

U.S. Cl. 521—54 **10 Claims**

1. A sealing gasket having uniform void volume comprised of a plastisol comprised of a plasticizer and a resin wherein at least about 70 percent of said resin is formed by dispersion polymerization said plastisol having incorporated therein hollow discrete microspheres with alkalinity no greater than about 0.5 milliequivalent per gram, the diameter ranging from about 1 to about 1 to about 300 microns and a wall thickness of not in excess of about 5 microns.

4,485,193

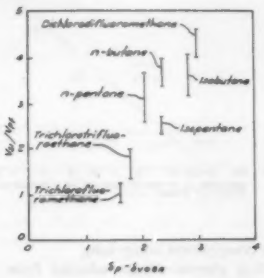
EXPANDABLE SYNTHETIC RESINOUS THERMOPLASTIC PARTICLES, METHOD FOR THE PREPARATION THEREOF AND THE APPLICATION THEREFOR

Louis C. Rubens, and Willard E. Alexander, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 493,194, May 10, 1983,. This application Apr. 16, 1984, Ser. No. 600,751

Int. Cl.³ C08J *9/22, 9/24*

U.S. Cl. 521—58 **15 Claims**



1. A method for the preparation of expanded monovinyl aromatic polymer particles comprising heating to a temperature of from about 20 to 60 degrees above the glass transition temperature of the polymer to cause the particles containing a blowing agent to form a plurality of closed gas containing cells, subjecting the expanded particles to an atmosphere of an inert gas capable of diffusing through walls of the gas containing cells at a rate greater than a volatile fluid foaming agent contained within the cells and subsequently heating the particles at a temperature above the glass transition temperature of the polymer to thereby increase the volume of the expanded particles to at least twice that of the volume of the particles prior to exposure to the inert gas with the further limitation that the expanded particles are resilient, wherein the particles having a swelling factor of at least 20 and a cross-linking coefficient of from about 0.8 to about 2.5 with the further limitation that the particles on heating to a temperature above the glass transition temperature of the polymer expand to at least 40 times their original volume at ambient temperature and on being pressurized at a pressure of at least 3 atmospheres in air for a period of 24 hours be capable of two-fold expansion when subjected to the conditions employed to expand the particles to at least 40 times their original volume.

4,485,194

EXTRACTION OF POLYOXYALKYLENE SURFACTANTS FOR PHENOLIC FOAM STABILIZATION

Richard L. Frentzel, and Ernest K. Moss, both of Clearwater, Fla., assignors to The Celotex Corporation, Tampa, Fla.

Division of Ser. No. 278,139, Jun. 29, 1981, Pat. No. 4,412,014, which is a continuation of Ser. No. 113,909, Jan. 21, 1980, abandoned. This application Oct. 17, 1983, Ser. No. 542,803

Int. Cl.³ C08J *9/14*

U.S. Cl. 521—129 **19 Claims**

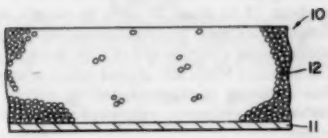
1. A process for producing a foam material, said process comprising reacting a member selected from the group consisting of polyurethane and polyisocyanurate foam forming reactants in the presence of a blowing agent and a surfactant which

is the minor component of a free radical polymerization, said minor component being obtained by the steps of:

(1) reacting together a cyclic nitrogenous vinyl monomer and an esterified unsaturated dibasic acid by free radical polymerization in the presence of a polyoxyalkylene adduct having the formula

H-(-polyoxyalkylene chain-)$_t$-R,

wherein R is an organic or inorganic radical and t is the number of polyoxyalkylene chains reacted onto R, said polyoxyalkylene adduct being optionally treated either before or after said polymerization with a capping agent capable of reacting with the hydroxyl groups of said adduct to reduce the hydroxyl number of said adduct to less than 50, said step (1) reaction product comprising and major component formed form the reaction of said cyclic nitrogenous vinyl monomer and unsaturated diester onto said polyoxyalkylene adduct and a minor component comprising a copolymer of said cyclic nitrogenous vinyl monomer and unsaturated diester which does not chemically react with said polyoxyalkylene adduct, (1) reaction product; and



(2) separating from said (1) reaction product by any conventional method said major and minor components thereof, and utilizing said minor component as the sole surfactant in the foaming reaction, having removed the major component from said step (1) reaction product.

4,485,195

ALKOXYLATED MANNICH CONDENSATES HAVING FIRE RETARDANCY PROPERTIES AND MANUFACTURE OF RIGID POLYURETHANE FOAM THEREWITH

Michael E. Brennan, and George P. Speranza, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 25, 1983, Ser. No. 545,423
Int. Cl.[3] C08G *18/14, 18/32*
U.S. Cl. 521—167 **12 Claims**

4. A method of preparing a polyol composition which comprises preparing a Mannich condensate of a phenolic component with formaldehyde and diethanolamine by reacting said phenolic component with formaldehyde and diethanolamine in the molar ratio of about 1 to about 3 mols of formaldehyde and from about 1 to about 3 mols of diethanolamine per mol of said phenolic component, while removing by product water of reaction, slurrying from about 3 to about 10 wt.% of melamine with said thus prepared Mannich condensate, adding about 1 to about 6 mols of formaldehyde based on the melamine and heating said slurry at a temperature within the range of about 80° to about 150° C. for about 1 to 5 hours, filtering said thus prepared reaction product and thereafter reacting said reaction product with from about 20 to about 50 wt.% of an alkylene oxide component comprising from 100 to about 90 wt.% of propylene oxide and from 0 to about 10 wt.% of ethylene oxide, said phenolic component comprising phenol or an alkylphenol having an alkyl group containing 1 to 12 carbon atoms.

7. A method of preparing a rigid polyurethane foam composition having improved fire retardancy properties which comprises:

reacting an excess of an aromatic polyisocyanate with a polyol component in the presence of a catalyst, a blowing agent, a surfactant and a fire retardant;

said polyol component having been prepared by heating a mixture of a Mannich condensate, from about 3 to about 10 wt.% of melamine, based on said condensate, and from about 1 to about 6 mols of formaldehyde per mol of melamine at about 80° to about 150° C. for about 1 to about 5 hours to prepare a reaction product and,

alkoxylating said reaction product with from about 20 to about 50 wt.% of an alkylene oxide component comprising 100 to about 90 wt.% of propylene oxide and, correspondingly, from about 0 to about 10 wt.% of ethylene oxide to prepare said polyol component;

said Mannich condensate having been prepared by reacting a phenolic component with about 1 to about 3 mols of formaldehyde and about 1 to about 3 mols of diethanolamine per mol of a said phenolic component, said phenolic component being selected from the group consisting of phenol and phenol substituted with an alkyl group containing 1 to 12 carbon atoms.

4,485,196

LIQUID PHASE POLYOLS WHICH ARE ALKYLENE OXIDE ADDUCTS OF TEREPHTHALIC ESTERS FROM RECYCLED POLYETHYLENE TEREPHTHALATE

George P. Speranza, Austin; Robert A. Grigsby, Jr., Georgetown, and Michael E. Brennan, Austin, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 26, 1983, Ser. No. 536,136
Int. Cl.[3] C08G *18/14*
U.S. Cl. 521—172 **19 Claims**

1. A mixture of aromatic polyols having hydroxyl and ester functionalities for use in preparing rigid foams, being produced by the process comprising

a. reacting recycled polyethylene terephthalate with an alkylene glycol to form a reaction product and

b. subsequently reacting the reaction product of step a. with an alkylene oxide in the presence of a catalyst.

4,485,197

RESINOUS COMPOSITION AND ANTIFOULING PAINT

Junji Yokoi, Nara; Naoki Yamamori, Minoo, and Motoyoshi Yoshikawa, Nara, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Jan. 6, 1983, Ser. No. 456,289
Claims priority, application Japan, Jan. 7, 1982, 57-1509
Int. Cl.[3] C08J *3/00*
U.S. Cl. 523—177 **10 Claims**

1. A resinous composition for an antifouling paint comprising an acrylic resin containing, as polymer constituting units, 20 to 55% by weight of a tri-organic tin α,β-unsaturated carboxylate, and 0.1 to 25% by weight of a hydroxyl bearing (meth)acrylate wherein the hydroxyl bearing (meth)acrylate is 2-hydroxyethyl methacrylate, 2-hydroxyethyl acrylate, hydroxypropyl acrylate or hydroxypropyl methacrylate, the remainder of the polymer constituting units being another different polymerizable unsaturated monomer selected from the group consisting of alkylacrylates, alkylmethacrylates, acrylamides, styrene, vinyl toluene and acrylonitrile.

6. An antifouling paint comprising, as resinous vehicle, the resinous composition of claim 1.

4,485,198

MONOMER-PLASTICIZED ELASTOMERS AND PROCESS FOR PRODUCING SAME

Parviz Hamed, Framingham, Mass., assignor to SW Industries, Inc., Providence, R.I.

Filed Sep. 23, 1982, Ser. No. 422,278
Int. Cl.[3] C08J *3/02;* C08F *265/08*
U.S. Cl. 523—335 **18 Claims**

1. A method for producing a non-crosslinked vulcanizable elastomeric composition comprising:

providing 100 parts by weight, solids basis, of a latex of an elastomeric polymer;

adding to and admixing with said latex 0.5–200 parts by weight of a polymerizable monomer;

coagulating the solids in said latex including said monomer and said elastomeric polymer, said admixing and coagulating being effected in the absence of a polymerization initiator for the monomer with substantially no polymerization of said monomer and substantially no crosslinking of or grafting onto said elastomeric polymer; and

separating said coagulated solids from the liquid phase as the elastomeric composition in the form of a homogeneous admixture of said polymer and said monomer free of any polymerization initiator for the monomer.

4,485,199

THERMOSETTING COATING COMPOSITION COMPRISING POLYMERIC CATALYST

Panagiotis I. Kordomenos, Mt. Clemens, and Kenneth R. Kurple, Anchorville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/00798, § 371 Date Jun. 14, 1982, § 102(e) Date Jun. 14, 1982

PCT Filed Jun. 14, 1982, Ser. No. 448,887

Int. Cl.[3] **C08L** *63/10, 33/02, 61/28*

U.S. Cl. 523—400 **30 Claims**

1. A novel, organic solvent based, thermosetting coating composition comprising:

A. epoxy ester resin of number average molecular weight (M_n) about 900 to about 5000, being the reaction product of diepoxide with (i) diphenol in chain extension reaction and (ii) monobasic fatty acid in chain terminating esterification reaction, which chain extension and esterification reaction occur substantially simultaneously at a reaction temperature reaching at least about 175° C., wherein the epoxy functionality, phenol functionality and carboxyl functionality are employed in relative proportions of about 1:0.4–1:0.4–1 equivalents, respectively;

B. polyfunctional aminoplast crosslinking agent; and

C. polycarboxy functional polymeric catalyst of number average molecular weight (M_n) about 1,000–10,000 being substantially unreactive at room temperature with the epoxy ester resin and the polyfunctional aminoplast crosslinking agent, in an amount of about 2% to about 15% by weight of resin solids in the coating composition.

4,485,200

NEOPRENE LATEX CONTACT ADHESIVES

Witold Perlinski, Middlesex; Irwin J. Davis, Bridgewater, and John F. Romanick, Denville, all of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Feb. 3, 1982, Ser. No. 345,295

Int. Cl.[3] **C08L** *61/04, 63/00*

U.S. Cl. 523—409 **6 Claims**

1. An improved two-part aqueous contact adhesive composition consisting essentially of:

(A)

(i.) a carboxylated neoprene latex,

(ii.) a tackifier selected from the group consisting of natural and modified rosins, polyterpene resins having a softening point of from about 40° to 150° C., phenolic resins, phenolic-modified terpene resins, and aliphatic petroleum hydrocarbon resins having a Ball and Ring softening point of from about 40° to 135° C.;

(iii.) a metallic oxide stabilizer; and

(iv.) an antioxidant other than a metallic oxide of (iii);

(B) an epoxy resin;

wherein for every 100 parts by weight of dry neoprene the epoxy resin component is present in an amount of 1 to 20 parts, the tackifier in an amount of 10 to 100 parts, the stabilizer in an amount of 0.5 to 10 parts and the antioxidant in an amount of 0.5 to 3 parts, the adhesive being cured by the addition of the epoxy component.

4,485,201

METHOD OF MODIFYING ASPHALT WITH THERMOPLASTIC POLYMERS, GROUND RUBBER AND COMPOSITION PRODUCED

Fred R. Davis, Kent, Ohio, assignor to Midwest Elastomers, Inc., Wapakoneta, Ohio

Filed Nov. 21, 1983, Ser. No. 553,821

Int. Cl.[3] **C08L** *7/00, 9/00, 53/04, 95/00*

U.S. Cl. 524—68 **20 Claims**

1. A thermoplastic elastomer asphalt composition, comprising:

a blend of

100 parts by weight of an asphalt, said asphalt having a penetration value of from about 160 to about 195, and a softening point of from about 104 to about 114;

from about 12 to about 20 parts by weight of a ground rubber per 100 parts by weight of said asphalt; said ground rubber having a particle size of from about 20 to about 60 U.S. Standard Mesh; said ground rubber selected from the class consisting of styrene-butadiene rubber, natural or synthetic polyisoprene, polybutadiene, or combinations thereof,

from about 2 to about 8 parts by weight of a styrene-butadiene block copolymer per 100 parts of said asphalt, said copolymer having at least two styrene blocks therein,

said block copolymer having from about 23 to about 40 percent by weight of styrene, a solubility parameter of from about 7.0 to about 9.0 and a weight average molecular weight of from about 5,000 to about 20,000, and from about 6 to about 10 parts by weight of a processing oil per 100 parts by weight of said asphalt.

4,485,202

ISOCYANURIC ACID ESTER STABILIZER

Yutaka Terada, Nishinomiya; Shinichi Yachigo, Toyonaka, and Tamaki Ishii, Suita, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

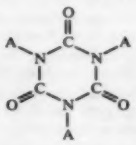
Filed Sep. 20, 1982, Ser. No. 420,081

Claims priority, application Japan, Sep. 25, 1981, 56-152530

Int. Cl.[3] **C08K** *5/34;* **C07D** *251/34*

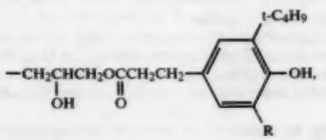
U.S. Cl. 524—101 **14 Claims**

7. A stabilized organic substance comprising an organic substance normally subject to oxidative degradation and an isocyanuric acid derivative represented by the general formula



(I)

wherein A represents



R being an alkyl, cycloalkyl, aryl or aralkyl group having 1 to 8 carbon atoms, in an amount of 0.001 to 5 parts by weight for 100 parts by weight of the organic substance.

4,485,203

PRODUCTION OF VERMICULITE PRODUCTS AND SUSPENSION FOR USE THEREIN

John Hutchinson, Frodsham, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Feb. 22, 1983, Ser. No. 468,710

Claims priority, application United Kingdom, Mar. 3, 1982, 8206238

Int. Cl.³ C08K 3/34

U.S. Cl. 524—414 6 Claims

1. An aqueous suspension of vermiculite lamellae having a urea-formaldehyde resin or a melamine-formaldehyde resin incorporated therein.

4,485,204

POLYESTER BLENDS COMPRISING A DESICCANT AND A RUBBERY BLOCK COPOLYMER

Lester G. Nabors, Stow, Ohio, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 26, 1981, Ser. No. 296,089

Int. Cl.³ C08K 3/10, 3/20

U.S. Cl. 524—430 19 Claims

1. The polyester composition consisting essentially of

(a) about 50 to 90 weight percent polyalkylene terephthalate polyester,

(b) rubbery block copolymer, and

(c) desiccant, wherein said desiccant is selected from the group consisting of calcium oxide, magnesium oxide, strontium oxide, barium oxide, and aluminum oxide;

optionally further with (f) light mineral oil.

4,485,205

RUBBER COMPOSITIONS SUITABLE FOR TIRES COMPRISING AMORPHOUS STYRENE-BUTADIENE COPOLYMER

Tatsuo Fujimaki, 2800-1, Ogawahigashi-cho, Kodaira City, Tokyo; Tomoharu Yamada, 29-1, Onta-cho 2-chome, Higashimurayama City, Tokyo; Keiko Katayama, 32-9, Hiraoka-cho, Hachioji City, Tokyo, and Seisuke Tomita, 4-5-708, Hon-cho 1-chome, Higashimurayama City, Tokyo, all of Japan

Continuation of Ser. No. 231,529, Feb. 4, 1981, abandoned. This application Nov. 29, 1982, Ser. No. 444,913

Claims priority, application Japan, Feb. 8, 1980, 55-13537

Int. Cl.³ C08L 9/06; C08K 3/04

U.S. Cl. 524—526 11 Claims

1. Rubber compositions for tires consisting mainly of a rubber blend consisting of 10–90% by weight of a high vinyl amorphous butadiene-styrene copolymeric rubber obtained by copolymerizing styrene with 1,3-butadiene in the presence of an alkyl-lithium catalyst and containing 3–30% by weight of bonded styrene and not less than 60% by weight of 1,2-bond in the butadiene unit, and 90–10% by weight of a dienic rubber having a glass transition temperature of lower than −60° C., said dienic rubber being at least one member selected from the group consisting of natural rubber, synthetic polyisoprene rubber, polybutadiene rubber and ethylene-propylene-diene ternary copolymeric rubber.

4,485,206

OIL-RESISTANT, ROOM TEMPERATURE-CURABLE ORGANOPOLYSILOXANE COMPOSITION

Yoshio Inoue, and Takehide Okami, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1983, Ser. No. 546,054

Claims priority, application Japan, Oct. 29, 1982, 57-190383

Int. Cl.³ C08K 5/35

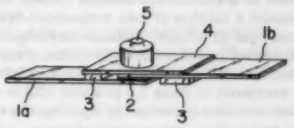
U.S. Cl. 524—719 11 Claims

1. An oil-resistant, room temperature-curable organopolysiloxane composition which comprises:

(a) 100 parts by weight of a diorganopolysiloxane having a degree of polymerization of at least 5 and terminated at both molecular chain ends each with a hydroxy group directly bonded to the terminal silicon atom;

(b) from 2 to 30 parts by weight of an organopolysiloxane composed of monofunctional siloxy units expressed by the general formula $R_3SiO_{\frac{1}{2}}$, in which R is a substituted or unsubstituted monovalent hydrocarbon group and tetrafunctional siloxane units expressed by the formula SiO_2 in a molar ratio of 0.5:1 to 1:1;

(c) from 0.5 to 30 parts by weight of an organosilane or an organopolysiloxane having, in a molecule, at least three hydrolyzable groups bonded to the silicon atom or atoms; and



(d) from 2 to 200 parts by weight of an inorganic zinc compound in a powdery form selected from the class consisting of zinc oxide, zinc carbonate and zinc hydroxycarbonate.

2. The oil-resistant, room temperature-curable organopolysiloxane composition as claimed in claim 1 which further comprises:

(e) from 0.1 to 20 parts by weight of an organic sulfur compound selected from the class consisting of thiazole compounds, thiuram compounds and dithiocarbamate compounds.

4,485,207

MACROSCOPIC DIVINYLBENZENE HOMOGENEOUS GELS AND PROCESS

Frank S. Bates, Cambridge, and Robert E. Cohen, Jamaica Plain, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 325,893, Nov. 30, 1981, abandoned, which is a continuation of Ser. No. 194,520, Oct. 6, 1980, abandoned. This application Sep. 19, 1983, Ser. No. 533,169

Int. Cl.³ C08F 12/36

U.S. Cl. 524—751 6 Claims

1. The process for forming the composition comprising a macroscopic gel network which is insoluble in a solvent, containing at least about 1.4×10^{-3} moles chemically accessible free vinyl groups per gram of gel, comprising a polymeric composition obtained by polymerizing a monomer composition selected from the group consisting of divinylbenzene monomer and divinylbenzene copolymerized with an acyclic nonacidic polymerizable monomer which comprises contacting said monomer composition with an anionic polymerization initiator in the presence of a solvent comprising a polar solvent composition, said solvent composition being selected from the group consisting of (a) a nonpolar solvent and a polar solvent comprising tetrahydrofuran, dimethoxyethane or tetramethylethylenediamine, (b) a mixture of dioxane and toluene, (c) a mixture of dioxane and benzene, (d) tetrahydrofuran at a temperature below about −40° C. and (e) dioxane at a temperature above about 30° C., the weight ratio of the soluble composition and the polymerization initiator being regulated to favor linear polymerization while minimizing cross linking and syneresis.

4,485,208

PLASTICIZED POLYDICYCLOPENTADIENE AND A METHOD FOR MAKING THE SAME

Daniel W. Klosiewicz, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 378,449, May 14, 1982,. This application Nov. 15, 1983, Ser. No. 552,195

The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.

Int. Cl.[3] C08K 5/10

U.S. Cl. 524—773 8 Claims

1. A method for making a thermoset polymer comprising polymerized units of dicyclopentadiene comprising: first, combining a plurality of reactant streams, one of which contains the activator of a methathesis-catalyst system, and a second, which contains a catalyst of said methathesis-catalyst system, and at least one of which contains dicyclopentadiene, and another monomer in a amount of up to about ten percent and at least one of which contains an ester plasticizer having a solubility parameter of from 7.8 to about 10.2 to form a reaction mixture and then immediately injecting the reaction mixture into a mold where polymerization occurs.

4,485,209

PROCESS FOR PRODUCING A POLYMER WATER-IN-OIL EMULSION

You-Ling Fan, East Brunswick, and George L. Brode, Bridgewater, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 302,108, Sep. 14, 1981, abandoned. This application Sep. 30, 1983, Ser. No. 537,513

Int. Cl.[3] C08K 5/01

U.S. Cl. 524—801 21 Claims

1. A semi-continuous process for producing an addition polymer water-in-oil emulsion, which process comprises:

(a) combining: (i) an aqueous solution comprising at least one water soluble ethylenic monomer and (ii) a mixture comprising a hydrophobic liquid, a hydrophobic ethylenic monomer and an oil-soluble surfactant;

(b) homogenizing the mixture from (a) to form a water-in-oil emulsion;

(c) deoxygenating said homogenized water-in-oil emulsion;

(d) continually adding the homogenized water-in-oil emulsion to a reactor during the course of the polymerization of the monomers while adding thereto a deoxygenated initiator solution;

(e) heating the mixture from (d) under polymerization conditions so as to form a polymer water-in-oil emulsion, and

(f) recovering a polymer water-in-oil emulsion.

4,485,210

PROCESS FOR THE CONTINUOUS PRODUCTION OF STAR-BLOCK COPOLYMERS OF A MONOVINYL AROMATIC MONOMER AND A CONJUGATED DIENE

David S. Neiditch, Evansville, Ind.; Gerald A. Bullano, Glen Mills, Pa.; Robert J. DiLullo, Paoli, Pa., and David E. Ofstein, West Chester, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 6, 1983, Ser. No. 482,385

Int. Cl.[3] C08F 297/04

U.S. Cl. 525—53 7 Claims

1. The process for the continuous anionic polymerization of star-block copolymers of a vinyl aromatic monomer and a conjugated diene monomer comprising:

(a) producing a polymer having a low weight average molecular weight to number average molecular weight ratio from a vinyl aromatic monomer by continuously feeding a solution of vinyl aromatic monomer in an inert solvent and a hydrocarbyllithium initiator in an inert solvent to form a first mixture in the bottom zone of a first, sealed, cylindrical, pressurized, vertical reactor having a bottom zone, a top zone, and a plurality of intermediate zones, each said zone separated from a adjacent zone by separation plates having a central aperture therethrough, and stirring means carried by a central shaft passing through said apertures with an annular space provided between the shaft and each said separation plate;

continuously passing said first mixture from the bottom zone to successive zones through the annular space between the shaft and each said separation plate, said annular space being dimensioned so as to provide a high interstage velocity relative to superficial velocity and a pressure differential of less than one pound per square inch between said successive zones;

stirring said first mixture while passing the same through each zone; and

continuously removing a solution of a polymer of said vinyl aromatic monomer from the top zone of said first reactor;

(b) continuously feeding said solution of polymer and a conjugated diene monomer to form a second mixture in the bottom zone of a second, sealed, cylindrical, pressurized, vertical reactor having a bottom zone, a top zone, and a plurality of intermediate zones, each said zone being separated from an adjacent zone by separation plates having a central aperture therethrough, and stirring means carried by a central shaft passing through said apertures with an annular space provided between the shaft and each said separation plate;

continuously passing said second mixture from the bottom zone to successive zones through the annular space between the shaft and each said separation plate, said annular space being dimensioned so as to provide a high interstage velocity relative to superficial velocity and a pressure differential of less than one pound per square inch between said successive zones;

stirring said second mixture while passing the same through each zone; and

continuously removing a solution of diblock copolymer from the top zone of the second reactor;

(c) continuously feeding said solution of diblock copolymer and a polyfunctional coupling agent to a third reactor to produce a star-block copolymer and continuously discharging a solution of the star-block copolymer therefrom;

(d) continuously mixing said solution of star-block copolymer with a termination agent in a termination reactor; and

(e) separating the resultant star-block copolymer from the inert solvent.

4,485,211

POLY(GLYCIDYL ETHER)BLOCK COPOLYMERS AND PROCESS FOR THEIR PREPARATION

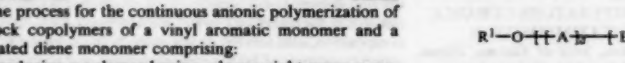
Yoshihisa Okamoto, Sagamore Hills, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 15, 1982, Ser. No. 418,341

Int. Cl.[3] C08F 297/00; C08G 65/12

U.S. Cl. 525—57 29 Claims

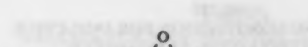
1. A block copolymer having at least one polyglycidyl ether block said block copolymer having the structure



(II)

wherein, R^1 represents the residue of a hydroxyl-containing material (HCM) selected from a first compound having from 1 to 4 terminal hydroxy (OH) propagating sites, including a first hydroxyl-terminated prepolymer having from 1 to 4 terminal OH propagating sites; and, a second compound having from 1 to about 200 pendant OH propagating sites;

A is derived from a first glycidyl ether having the structure



(I)

wherein each R is independently selected from the group consisting of hydrogen, alkyl, haloalkyl, oxyalkylene, oxyhaloalkylene, alkoxyalkyl, aryl (Ar) and substituted aryl (Ar—Q), wherein Q is selected from the group consisting of alkyl, haloalkyl each having from 1 to about 10 carbon atoms, alkenyl and haloalkenyl each having from 2 to about 10 carbon atoms; and, unsaturated hydrocarbyl radicals,

B is derived from a second glycidyl ether having different substituents from those in said first glycidyl ether but also having structure (I);

C is derived from a haloalkyl epoxide;

when R^1 is polyglycidyl ether residue,

(i) at least one of A or B, and C is present;

(ii) at least two glycidyl ethers arbitrarily selected from A and B are present; and,

(iii) when C is present, at least one of A or B is present;

so that the molecular weight of the resulting block copolymer is directly proportional to the amount of monomer converted; and, a, b, and c represent integers in the range from about 5 to about 100;

D represents an integer in the range from 1 to about 200; so that the molecular weight of each of the segments of the copolymer is in the range from about 500 to about 10,000, the segments are present in a heterogenous relative order, and the molecular weight of the block copolymer is in the range from about 1000 to about 2,000,000.

11. The block copolymer of claim **1** wherein at least one segment, and, optionally, R^1, contains a reactive halogen capable of an addition reaction with an amine to yield an aminated block copolymer.

16. A process for the manufacture of a poly(glycidyl ether) block copolymer, which process comprises,

(i) polymerizing, in a first step, an organic hydroxyl-containing material (HCM) containing from 1 to about 200 hydroxyl groups with a first oxirane monomer selected from the group consisting of an acyclic glycidyl ether, a cyclic glycidyl ether, and a haloalkyl epoxide, in the presence of a catalytic amount of a catalyst selected from the group consisting of an HMF_6 acid, and, an oxonium salt of the HMF_6 acid, wherein M is an element selected from the group consisting of phosphorus, arsenic and antimony, and,

(ii) polymerizing, in a second step, the polymer from said first step with a second oxirane monomer, different from said first oxirane monomer, also selected from the group consisting of an acyclic glycidyl ether, a cyclic glycidyl ether, and a haloalkyl epoxide, in the presence of a catalytic amount of said catalyst,

such that, in each said step, the resulting polymer formed in said step is essentially directly proportional to the conversion of the monomer to said resulting polymer.

4,485,212

IMPACT RESISTANT BLEND OF POLYBUTYLENE TEREPHTHALATE RESIN AND OSA GRAFT COPOLYMER

John M. Wefer, Newtown, Conn., assignor to Uniroyal, Inc., Middlebury, Conn.

Filed May 27, 1983, Ser. No. 498,613

Int. Cl.³ C08L *67/02*

U.S. Cl. 525—64 **7 Claims**

1. An impact resistant blend comprising a mixture of

(A) poly(1,4-butylene terephthalate) resin, and

(B) a graft copolymer of (a) styrene and acrylonitrile on (b) an ethylene-propylene-non-conjugated diene terpolymer rubber spine,

the amount of (B) being from 25 to 55% by weight based on the total weight of (A) and (B), the amount of (a) in the graft copolymer being from 35 to 60% by weight based on the weight of (a) plus (b), and the ratio of styrene to acrylonitrile being in the range from 90:10 to 60:40 by weight, the said graft copolymer (B) being an inverted composition in which the rubber (b) is a discontinuous phase.

4,485,213

PROCESS FOR THE PRODUCTION OF HIGH IMPACT BLOCK COPOLYAMIDE

Tadao Matsuo; Shuji Mori, both of Hyogo, and Kenzo Tanaka, Aichi, all of Japan, assignors to Mitsuboshi Belting Ltd., Hyogo, Japan

Filed Mar. 28, 1983, Ser. No. 479,237

Claims priority, application Japan, Mar. 27, 1982, 57-49326

Int. Cl.³ C08F *8/30*; C08L *77/00, 35/00*

U.S. Cl. 525—123 **5 Claims**

1. A process for producing high impact block copolyamide, comprising the steps of:

reacting a compound selected from the group consisting of a butadiene homopolymer and a butadiene-acrylonitrile copolymer, the homopolymer and copolymer having hydroxyl groups at both terminals thereof, with a compound selected from the group consisting of polymethylene polyphenylene isocyanate and tolylene diisocyanate at an equivalent ratio of cyanate group to hydroxyl group (NCO/OH) of 1:1 or more, in order to produce a prepolymer polymerization accelerator;

carrying out bulk polymerization by providing the prepolymer polymerization accelerator in a reaction vessel with a ω-lactam; and

anion polymerizing the ω-lactam in the presence of the accelerator to provide the block copolyamide.

4,485,214

HIGH IMPACT POLYAMIDE COMPOSITION

Kenji Ochiai, Fujisawa, and Tomiyasu Sakurai, Yokohama, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 20, 1982, Ser. No. 400,066

Claims priority, application Japan, Aug. 4, 1981, 56-121357

Int. Cl.³ C08F *8/30*

U.S. Cl. 525—179 **10 Claims**

1. A high impact polyamide composition comprising a polyamide(A), an ethylene ionomer resin(B) and an elastomeric ethylene copolymer(C);

the weight proportion of the polyamide(A) relative to the total of (A), (B) and (C) being 60 to 90%, the weight proportion of the ethylene ionomer resin(B) relative to the total of (A), (B) and (C) being 1 to 45%, and the weight proportion of the elastomeric ethylene copolymer(C) relative to the total of (A), (B) and (C) being 0.5 to 40%;

and wherein the ethylene ionomer resin(B) and the elastomeric ethylene copolymer(C) respectively have melt indexes (F_b) and (F_c) satisfying the inequalities;

$$3 \geq F_b \geq 0.2$$

$$10 \geq F_c \geq 1$$

$$50 \geq F_c/F_b \geq 2$$

said melt indexes F_b and F_c each being given in terms of a value (g/10 min) as measured at a cylinder temperature of 190° C. with a load of 2160 g in accordance with ASTM-D 1238.

4,485,215

MOLDING COMPOSITION

Barry D. Dean, Springfield, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 11, 1983, Ser. No. 493,458
Int. Cl.[3] C08L 35/02
U.S. Cl. 525—205 16 Claims

1. A thermoplastic molding composition comprising (a) a matrix resin comprised of a monoalkenyl aromatic monomer, a dicarboxylic anhydride imide monomer and a monoalkenyl nitrile monomer; (b) an ethylene-propylene-diene terpolymer rubber; and (c) an ethylene based thermoplastic elastomer containing an acrylate functionality wherein the molding composition is produced by polymerizing in a temperature range of about 60° C. to about 120° C. the polymerizing the monomers of which the matric resin is comprised matrix resin (a) in the presence of the (b) and the (c).

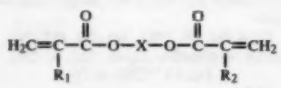
4,485,216

POLYCHLOROPRENE MIXTURES AND THE USE THEREOF

Rüdiger Musch, Bergisch-Gladbach; Wilhelm Göbel, Leverkusen; Wolfgang Konter, Neuss, and Eberhard Müller, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 6, 1983, Ser. No. 529,389
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1982, 3234318
Int. Cl.[3] C08L 11/00, 27/22
U.S. Cl. 525—215 6 Claims

1. Solid polychloroprene mixtures of peptized sol and gel polymer, characterised in that the sol component consists of copolymer of chloroprene and from 0.75 to 0.32% by weight of sulphur, based on the toal quantity of unsaturated compounds of the sol polychloroprene, and up to 10% by weight of the chloroprene may be replaced by other comonomers, and the gel component consists of a copolymer of chloroprene, from 0.4 to 1.0% by weight of sulphur, based on the total quantity of unsaturated compounds of the gel polychloroprene, and from 7.5×10^{-3} to 3.0×10^{-2} mols, based on 100 g of the total quantity of monomer of the gel polychloroprene, of a compound corresponding to the general formula



wherein R_1 and R_2 represent hydrogen or C_1–C_4 alkyl, and X represents C_2–C_{10} alkylene,
and up to 10% by weight of the chloroprene may be replaced by other comonomers.

4,485,217

METHOD FOR REDUCING SHRINKAGE OF INJECTION MOLDED LINEAR LOW DENSITY POLYETHYLENE

Harvey R. Gunter, Bridge City; Gary L. Stutzman, Woodlands, both of Tex., and Stephen G. Salerno, Lawrenceville, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 13, 1983, Ser. No. 484,732
Int. Cl.[3] C08L 23/06, 23/08, 23/18
U.S. Cl. 525—240 7 Claims

1. A method for injection molding articles from a linear low density copolymer of ethylene and higher olefins having a density of less than 0.94 and a melt index of 30 to 150 in which shrinkage is reduced by blending said linear low density copolymer with an effective amount of from 3 to 15 weight percent based on the total weight of the blend, of a high pressure low density polyethylene, and injection molding said blend.

4,485,218

ENCAPSULATING COMPOSITION FOR INDUCTIVE DEVICES CONTAINING ELASTOMERIC POLYBUTADIENE HAVING PREDOMINATE TRANS-1,4 CONFIGURATION

Gordon M. Bell, Fort Wayne, and James R. Ridlen, Spencerville, both of Ind., assignors to General Electric Company, New York, N.Y.

Filed Feb. 18, 1982, Ser. No. 349,736
Int. Cl.[3] C08L 9/00; C08F 279/02
U.S. Cl. 525—257 9 Claims

1. A composition for use in the insulation of electrical equipment consisting essentially of:

Ingredient	Parts
elastomeric polybutadiene consisting of about 54 to about 66 weight percent trans-1,4 polybutadiene, about 16 to about 24 weight percent cis-1,4 polybutadiene, and about 16 to about 24 weight percent vinyl-1,2 polybutadiene	100
vinyl toluene	0 to 40
trimethylol propane trimethacrylate	0 to 10
peroxide crosslinking agent	2.5 to 5
inhibitor	0.1 to 0.9.

4,485,219

PHENYLENE ETHER COPOLYMER AROMATIC POLYCARBONATE BLENDS

John C. Falk, Northbrook, and Klementina F. Khait, Skokie, both of Ill., assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Dec. 1, 1983, Ser. No. 556,889
Int. Cl.[3] C08L 71/04
U.S. Cl. 525—394 8 Claims

1. In a thermoplastic blend comprising an aromatic carbonate polymer of a dihydric phenol and a polyphenylene ether resin, the improvement wherein the polyphenylene ether is a copolymer of from 98 to 80 wt% 2,6-dialkyl phenol and from 2 to 20 wt% 2,3,6-trialkylphenol.

4,485,220

POLYOXAZOLINE MODIFIED UNSATURATED POLYESTERAMIDES

Robert E. Hefner, Jr., Lake Jackson, Tex., and Robert E. Hefner, Sr., Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 23, 1982, Ser. No. 452,583
Int. Cl.[3] C08G 69/44; C08L 77/12
U.S. Cl. 525—411 18 Claims

1. An unsaturated polyesteramide comprising the reaction product of

a. a curing amount of a diacid or anhydride of a diacid;

b. a curing amount of a polyahl; and

c. an effective amount of a poly[(alkionylimino)alkylene] such that a cured resin of said unsaturated polyesteramide has increased physical properties compared to a cured resin prepared without said poly[(alkionylimino)alkylene];

wherein at least a portion of one of the diacid or anhydride or the polyahl, contains addition polymerizable unsaturation.

4,485,221

PROCESS FOR MAKING EPOXY NOVOLAC RESINS WITH LOW HYDROLYZABLE CHLORINE AND LOW IONIC CHLORIDE CONTENT

Ulf A. Krueger, Coventry, and Yel S. Sury, Warwick, both of R.I., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 3, 1983, Ser. No. 548,273

Int. Cl.³ C08G *59/08, 59/14*

U.S. Cl. 525—507 **14 Claims**

1. A process for making an epoxy novolac resin with a hydrolyzable chlorine content under 100 ppm and with an ionic chloride content of under 1 ppm, which comprises

dissolving the crude epoxy novolac resin, prepared by the reaction of a novolac resin with epichlorohydrin in an alkaline medium, in an inert organic solvent,

reducing the water content of the organic solution to less than 0.1% by weight,

adding to the essentially anhydrous solution an alkali metal alkoxide, dissolved in an alkanol or in another suitable solvent, in an amount which is 105–200% of the theoretical equivalent amount required to complete the dehydrochlorination reaction, based on the content of hydrolyzable chlorine in the crude resin, at a temperature of 20°–140° C.,

adding 0.2 to 2% by weight of water, based on the crude resin solution,

neutralizing the excess alkali metal alkoxide by the addition of a weak acid at 20°–50° C. until a pH value of 3 to 6 is attained,

removing the alkali metal salt formed by treatment with from 0.5 to 5% by weight of the crude resin solution of a filter aid or mixture of filter aids followed by filtration, and

isolating the epoxy novolac resin by vacuum distillation of the inert organic solvent at a temperature of 100°–200° C.

4,485,222

THERMOSETTING POLYURETHANE COMPOSITIONS

Girish G. Parekh, Fairfield, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Mar. 28, 1983, Ser. No. 479,530

Int. Cl.³ C08L *61/28, 67/02*

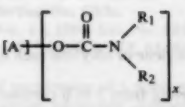
U.S. Cl. 525—517 **16 Claims**

1. A thermosetting polyurethane composition comprising:

(a) a polymer having molecular weight of from 500 to 20,000 and containing from about 0.3 to about 15 percent by weight based on total weight of said polymer, of one or more free functional groups selected from —OH, COOH, $—CONH_2$ and

$—OCNH_2$; and

(b) a mixture of monomeric and oligomeric polyfunctional substituted urethane compounds, selected from the groups consisting of: (i) monomeric compounds of the formula:



wherein:

A is a di- to hexavalent organic moiety;

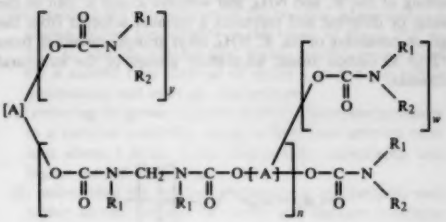
X is an integer from 2 to 6;

R_1 is hydrogen, $—CO_2OH$ or $—CH_2OR_3$;

R_2 is $—CH_2OH$ or $—CH_2OR_3$; and

R_3 is C_1 to C_4 alkyl,

and (ii) oligomeric compounds of the formula



wherein:

A, R_1 and R_2 are as defined in (i)

n is an integer from 1 to 5

w is an integer from 0 to 4

y is an integer from 1 to 5.

4,485,223

(METH)ACRYLIC ACID/ITACONIC ACID COPOLYMERS, THEIR PREPARATION AND USE AS ANTISCALANTS

Stanley W. Walinsky, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 316,365, Oct. 29, 1981, abandoned. This application Jul. 22, 1982, Ser. No. 401,055

Int. Cl.³ C08F *2/22*

U.S. Cl. 526—80 **6 Claims**

1. A process for preparing a substantially homogeneous (meth)acrylic acid/itaconic acid copolymer of number average molecular weight from about 500 to 7000, which comprises:

contacting in aqueous medium from about 95 to 10 mole percent itaconic acid monomer with from about 5 to 90 mole percent acrylic or methacrylic acid monomer over a period of from about 2 to 8 hours at a temperature of from about 80° to 120° C. in the presence of from about 5 to 20 mole percent polymerization initiator, based on the total amount of said monomers,

said acrylic or methacrylic acid monomer and at least half of said initiator being added separately and essentially continuously throughout said period to said itaconic acid monomer in solution in said medium.

4,485,224

ACRYLAMIDE POLYMERIZATION

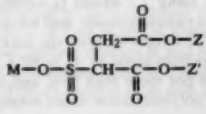
Robert A. Smith, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 2, 1983, Ser. No. 528,819

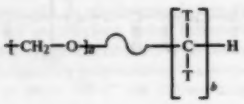
Int. Cl.³ C08F *2/00, 4/40, 220/56*

U.S. Cl. 526—214 **18 Claims**

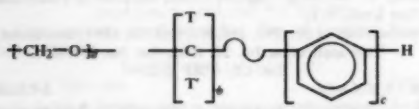
1. A process for the homopolymerization of acrylamide and for the copolymerization of acrylamide with vinyl monomers to produce water soluble homo- or copolymers; comprising: initiating said homopolymerization or said copolymerization with a redox system and carrying out said homopolymerization or said copolymerization to produce a high molecular weight polymer with said high molecular weight being above about 1,000,000 in an aqueous reaction medium at a temperature of from about −20° C. to about 40° C. in the presence of from about 2 weight percent to about 20 weight percent, based on the total weight of the reaction medium, of a molecular weight jumper of the structural formula:



wherein M represents a member selected from the group consisting of Na, K, and NH_4; and wherein Z and Z' can be the same or different and represent a member selected from the group consisting of Na, K, NH_4, alkyl groups containing from 12 to 30 carbon atoms, alkyl-ether groups of the structural formula:



wherein T and T' can be the same or different and represent a hydrogen atom, a methyl group, or an ethyl group, wherein a and b are integers, wherein ~ indicates that the distribution of repeat units can be in any order, and wherein the alkyl-ether group contains from 12 to 30 carbon atoms; aryl-ether groups of the structural formula:



wherein T and T' can be the same or different and represent a hydrogen atom, a methyl group, or an ethyl group, wherein a, b, and c are integers, wherein ~ indicates that the distribution of repeat units can be in any order, wherein chain linkages through the benzene ring can be in an ortho, meta, or para orientation, and wherein the aryl-ether group contains from 12 to 30 carbon atoms.

4,485,225

METHOD FOR CONTINUOUS COPOLYMERIZATION OF ETHYLENE AND VINYL ACETATE

Kenji Satoh, and Kiyoshi Yonezu, both of Okayama, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Continuation of Ser. No. 400,963, Jul. 22, 1982,. This application Nov. 30, 1983, Ser. No. 557,401

Claims priority, application Japan, Jul. 28, 1981, 56-118867; Sep. 14, 1981, 56-145231; May 17, 1982, 57-83652

Int. Cl.³ C08F *218/100*

U.S. Cl. 526—331 **7 Claims**

1. A method of producing an ethylene and vinyl acetate copolymer having an ethylene content of less than 60 mole % without causing gel formation which comprises continuously copolymerizing ethylene and vinyl acetate in the presence of a methanol solvent using 2,2'-azobis (2,4-dimethyl- 4-methoxyvaleronitrile) as a radical initiator, said solvent concentration being lower than 20 weight %, wherein the copolymerization temperature ranges from about 35° C. to 80° C., the conversion of vinyl acetate is not more than 85% and the average residence time in the polymerization vessel ranges from 1.5 hours to 15 hours.

4,485,226

PROCESS FOR THE PRODUCTION OF COMPOUNDS CONTAINING ISOCYANURATE GROUPS AND OLEFINIC DOUBLE BONDS, THE COMPOUNDS OBTAINABLE BY THIS PROCESS AND THEIR USE AS BINDERS OR BINDER COMPONENT IN COATING COMPOSITIONS

Klaus Noll; Josef Pedain, both of Cologne, and Manfred Bock, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 2, 1984, Ser. No. 606,308

Claims priority, application Fed. Rep. of Germany, May 18, 1983, 3318147

Int. Cl.³ C08G *18/32, 18/67, 18/79, 18/80*

U.S. Cl. 528—45 **16 Claims**

1. A process for the production of compounds which cross-link under the effect of high-energy radiation containing isocyanurate groups, olefinic double bonds and, optionally, blocked or free isocyanate groups which comprises reacting

(i) isocyanurate-group-containing polyisocyanates which are based on aliphatic and/or cycloaliphatic diisocyanates with

(ii) compounds containing at least one isocyanate-reactive group and at least one olefinic double bond, comprising at least one member selected from the group consisting of hydroxyl-containing esters of acrylic acid and methacrylic acid with at least dihydric aliphatic alcohols having a molecular weight of from 62 to about 300,

to form urethanes, the quantitative ratios between the reactants being selected so that for every free isocyanate group in (i), the reaction mixture contains from about 0.9 to 1.5 hydroxyl groups of component (ii).

4,485,227

BIOCOMPATIBLE POLY-(ETHER-URETHANE-UREA) AND PROCESS FOR ITS PREPARATION

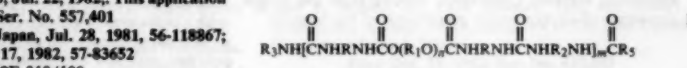
Adrian S. Fox, Waterford, Conn., assignor to Howmedica, Inc., New York, N.Y.

Filed Jun. 16, 1983, Ser. No. 505,130

Int. Cl.³ C08G *18/38*

U.S. Cl. 528—61 **16 Claims**

1. A biocompatible and hemocompatible segmented poly-(ether-urethane-urea) of the formula I:



wherein

R=arylene, aralkylene or alkylene each having from 6 to 20 carbons,

R_1=alkylene having from 2 to 6 carbons,

R_2=alkylene having from 2 to 6 carbons,

R_3=alkyl having up to 4 carbons or R_5CONHR_4or $R_6NHCONHR_4$ wherein

R_4=alkylene having from 2 to 6 carbons,

R_5=aryl or alkyl each having up to 16 carbons and

R_6=aryl or alkyl each hving up to 12 carbons,

n=a number from about 7 to 35, and

m=a number from about 5 to 20.

4,485,228

THERMOSETTING HIGH SOLIDS SOLVENT-BASED POLYESTER-URETHANE TWO-COMPONENT COATING COMPOSITIONS

Wen-Hsuan Chang, Gibsonia; Ronald R. Ambrose, Allison Park; David T. McKeough, Gibsonia; Samuel Porter, Jr., Natrona Heights, and Byron K. Johnston, Arnold, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 3, 1983, Ser. No. 538,630

Int. Cl.³ C08G *18/42*

U.S. Cl. 528—84 **25 Claims**

1. A high solids, solvent-based, thermosetting, two-component coating composition having a sprayability of at least 40 percent, which when cured is flexible and hard in that when the coating composition is deposited on an elastomeric substrate and cured, the coated substrate can be bent around a ½-inch mandrel with the coating facing outwardly and the coating exhibits substantially no breaks or cracks when tested at 35° F.; and in that when the coating composition is deposited on a metallic substrate and cured, the coated substrate has a Sward hardness of at least 14; wherein said coating composition contains as a first component a film-former comprising a polyester-urethane polyol and as a second component a polyisocyanate curing agent; and wherein the polyester-urethane polyol has a hydroxyl value of at least 50 and comprises:

(A) about 60 to 95 percent by weight acyclic moieties, and optionally

(B) up to 30 percent by weight cyclic moieties;

the sum of the weight percentage of cyclic moieties and the weight percentage of urethane moieties multiplied by 3 is from about 15 to 65; the equivalent ratio of the polyester-urethane polyol to the polyisocyanate curing agent is 0.8 to 1.3:1.

4,485,229

EPOXY RESIN CONTAINING A COMBINATION OF HIGH AND LOW MOLECULAR WEIGHT POLYOXYALKYLENE POLYAMINE CURING AGENTS

Harold G. Waddill, and Richard J. G. Dominguez, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 15, 1984, Ser. No. 580,482

Int. Cl.³ C08G *59/50*

U.S. Cl. 528—111 **5 Claims**

1. An epoxy resin composition having superior adhesion properties and being the cured reaction product of a curable admixture which comprises a vicinal polyepoxide having an epoxide equivalency of greater than 1.8 and a curing amount of a combination of polyamines comprising:

an effective amount of about 15 wt.% or less of a polyoxyalkylene polyamine having an amine functionality greater than 2 and a molecular weight of about 5,000 or more and about 85 wt.% or more of a polyoxyalkylene polyamine of functionality 2 or greater and a molecular weight of about 200 to 450.

4,485,230

POLYARYLATE FORMATION BY ESTER INTERCHANGE REACTION

Michael C. Yu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 13, 1983, Ser. No. 531,540

Int. Cl.³ C08G *63/18, 63/60*

U.S. Cl. 528—125 **18 Claims**

1. The process of preparation of a polyarylate which comprises heating a reaction admixture comprising at least one bisphenol, at least one aromatic dicarboxylic acid, and at least one organic acid anhydride, employing a mole ratio of bisphenol:diacid of about 0.8:1 to 1.2:1, conducted in steps comprising:

(a) heating said reaction admixture up to a moderately elevated first temperature not to exceed about 160° C. at a suitable pressure under an inert gas atmosphere during a first time interval of about 0.25 to 2 hours, and maintaining said first temperature for about 1 to 3 hours;

(b) elevating the temperature of the reaction admixture to a higher second temperature in the range of about 250° to 350° C. and maintaining said higher second temperature for a second time interval of about 1 to 4 hours while maintaining said inert gas atmosphere;

(c) reducing the pressure of the reaction admixture gradually to a vacuum condition during a third time interval of at least about 1 hour, while substantially maintaining said higher second temperature; and

(d) maintaining the reaction admixture at substantially said higher second temperature under said vacuum condition for a fourth time interval of at least about 2 hours,

thereby producing said polyarylate.

4,485,231

ISOIMIDE CONTAINING OLIGOMERS

Abraham L. Landis, Northridge, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

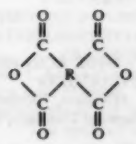
Continuation-in-part of Ser. No. 286,317, Jul. 24, 1981, Pat. No. 4,438,273. This application Sep. 26, 1983, Ser. No. 535,975

Int. Cl.³ C08G *73/06, 73/10, 73/12*

U.S. Cl. 528—125 **22 Claims**

1. A polymerizable isoimide-containing oligomer prepared by:

(a) reacting in a chosen organic solvent a carboxylic dianhydride having the formula:



wherein R is a tetravalent organic group containing 2 to 27 carbon atoms with a diamine having the formula:

$$H_2N—R_5—NH_2$$

wherein R_5 is a divalent organic group containg 6 to 30 carbon atoms,

(b) reacting the product of (a) with a functional amine having the formula:

$$H_2N—R_1—X$$

wherein R_1 is a divalent organic group containg 1 to 20 carbon atoms, and X is a radical having an unsaturated functional group capable of undergoing addition polymerization with another radical having an unsaturated functional group,

(c) cooling the reaction mixture produced in (b) to a selected temperature about at least as low as ambient temperature,

(d) adding to said reaction mixture at said selected temperature a chosen dehydrating agent to dehydrate and cyclize the product of (b) to thereby form said isoimide-containing oligomer.

4,485,232

TWO STAGE MELT PRODUCTION OF HIGH MOLECULAR WEIGHT POLYBENZIMIDAZOLES WITH PHOSPHOROUS CATALYST

Eui W. Choe, Randolph, and Anthony B. Conciatori, Chatham, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 461,888, Jan. 28, 1983, Pat. No. 4,452,972. This application Oct. 18, 1983, Ser. No. 543,052

Int. Cl.³ C08G *73/18*

U.S. Cl. 528—207 **2 Claims**

1. A two stage polymerization process for the production of high molecular weight polybenzimidazole from at least one monomeric aromatic reactant having a pair of amine substituents in an ortho position relative to each other and a carboxylate ester group positioned on an aromatic nucleus, which comprises heating the reactant above the reactant melting temperature in a first stage melt polymerization zone in contact with a phosphorus-containing polymerization catalyst selected from arylphosphonic acids or arylphosphinic acids, to provide a foamed prepolymer; and heating the prepolymer in a second stage solid state polymerization zone at a temperature above about 250° C. to produce high molecular weight polybenzimidazole product.

4,485,233

POLY(ESTER-AMIDE) HOT-MELT ADHESIVES

Richard L. Veazey, East Windsor, N.J., assignor to Union Camp Corporation, Wayne, N.J.

Filed Feb. 27, 1984, Ser. No. 583,963

Int. Cl.³ C08G *63/54*

U.S. Cl. 528—295.3 **15 Claims**

1. A poly(ester-amide) adhesive composition which comprises: the product of the random polymerization of

(a) from 10 to 60 equivalent percent of a polymeric fatty acid and

(b) from 40 to 90 equivalent percent of a dicarboxylic acid; with a substantially equivalent amount of

(c) from 40 to 90 equivalent percent of an organic diamine and

(d) from 10 to 60 equivalent percent of a diol.

4,485,234

METHOD OF PREPARING POLYAMIDE ACID FOR PROCESSING OF SEMICONDUCTORS

Daisuke Makino, Hitachi, and Yasuo Miyadera, Shimodate, both of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Division of Ser. No. 307,199, Sep. 30, 1981, Pat. No. 4,447,596, which is a continuation of Ser. No. 54,429, Jul. 3, 1979, abandoned. This application Feb. 15, 1984, Ser. No. 580,520

Claims priority, application Japan, Jul. 11, 1978, 53-84295

Int. Cl.³ C08G *73/10*

U.S. Cl. 528—329 **7 Claims**

1. A method of preparing polyamide acid useful for processing of semi-conductors from (i) at least one diamine and (ii) a tetracarboxylic acid dianhydride and a diaminocarbonamide in an inert solvent, which comprises the steps of

(1) reacting (i) at least one diamine and (ii) at least one tetracarboxylic acid dianhydride and at least one diaminocarbonamide, at a temperature below 40° C. to form a polyamide acid having a reduced viscosity above 0.5 dl/g at 30° C., and

(2) heating said polyamide acid in an inert solvent at a temperature between 50° C. and 100° C. to lower the viscosity of said polyamide acid whereby the reduced viscosity of said polyamide acid is more than 0.3 dl/g at 30° C. and the solution viscosity of said polyamide acid in the inert solvent is 500 to 3,000 centipoises at 25° C.,

the reduced viscosity being measured by forming a 0.1 dl/g solution of said polyamide acid in dimethylsulfoxide and measuring the viscosity of the solution with a Ubbelohde's viscometer in accordance with Japanese Industrial Standard K 5400, and the solution viscosity being measured by measuring the viscosity of the solution of said polyamide acid in dimethylsulfoxide with a Brookfield type viscometer in accordance with Japanese Industrial Standard K 6901.

4,485,235

PROCESS FOR PREPARING 7-α-METHOXYCEPHEM COMPOUNDS

Kiyoaki Katano; Kunio Atsumi, both of Yokohama; Fumio Kai, Fujisawa; Ken Nishihata, and Eiichi Akita, both of Yokohama, all of Japan, assignors to Meiji Seika Kaisha Ltd., Tokyo, Japan

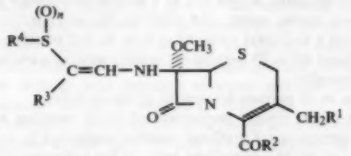
Filed Apr. 30, 1982, Ser. No. 373,700

Claims priority, application Japan, May 14, 1981, 56-71343

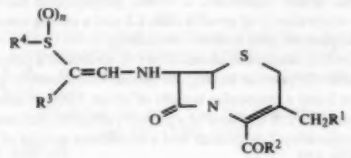
Int. Cl.³ C07D *501/57*; A61K *31/545*

U.S. Cl. 544—021 **3 Claims**

1. A process for preparing a compound of the formula



wherein R^1 represents a hydrogen atom or the group —A—B wherein A is an oxygen atom or a sulfur atom and B is selected from acetyl, 1H-tetrazol-5-yl, 1-methyl-tetrazol-5-yl, 1-carboxymethyl-1H-tetrazol-5-yl, 2-carboxymethyl-1-methyl-1H-triazol-5-yl, 2-carboxymethyl-1H-triazol-5-yl, 1-sulfoethyl-1H-tetrazol-5-yl or carbamoyl; R^2 represents a hydroxy group or a carboxyl-protecting group; R^3 represents a hydrogen atom, an alkyl group or a halogen atom; R^4 represents an alkyl group or a group selected from phenyl, o-, m- and p-chlorophenyl, o-, m- and p-methoxyphenyl, o-, m- and p-nitrophenyl or o-, m- and p-tolyl; and n is an integer of 1–2, which comprises reacting a compound of the formula



wherein R^1, R^2, R^3, R^4, and n are as defined above with an oxidizing agent simultaneously with or subsequently subjecting to the action of methanol and borex.

4,485,236

AZLACTONE-FUNCTIONAL COMPOUNDS

Jerald K. Rasmussen, Stillwater; Steven M. Heilmann, North St. Paul, and Frederick J. Palensky, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

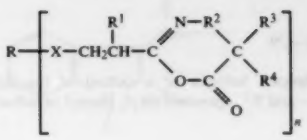
Filed Sep. 27, 1982, Ser. No. 424,500

Int. Cl.³ C07D *265/06*

U.S. Cl. 544—69 **9 Claims**

1. An azlactone-functional compound having the formula

Formula I



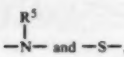
wherein

R^1 is hydrogen, chlorine or a methyl group;

R^2 is a single bond or a methylene or ethylene group, the last two of which can be substituted by alkyl groups having 1 to 6 carbon atoms or phenyl groups;

R^3 and R^4 are independently an alkyl or cycloalkyl group having up to 12 carbon atoms, an aryl or aralkyl group having 6 to 12 carbon atoms, or R^3 and R^4 taken together with the carbon atom to which they are attached form a 5- to 12-membered carbocyclic ring;

X is a nucleophilic group selected from



in which R^5 is a hydrocarbyl group selected from (1) an alkyl or cycloalkyl group having up to 18 carbon atoms and (2) an aryl or aralkyl group having 6 to 12 carbon atoms, R^5 being optionally substituted by at least one cyano or halo;

R is a mono or polyvalent organic group that has a valence of n and is the residue of a nucleophilic group-substituted compound, $(HX)_nR$, in which X is defined above, the residue having a molecular weight up to 20,000, R being selected from (1) an aliphatic group having 2 to 20 carbon atoms and an aryl group having up to 20 carbon atoms, these groups optionally having one to four catenary heteroatoms of oxygen, nitrogen or sulfur, (2) polyoxyalkylene, (3) polyester, (4) polyolefin, (5) polyacrylate, and (6) polysiloxane, all optionally including at least one non-nucleophilic or nucleophilic group; and

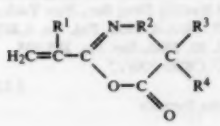
n is an integer having a value of one to six.

7. A method for preparing azlactone-functional compounds comprising the steps:

(1) admixing

(a) one to n gram moles of at least one alkenyl azlactone having the formula:

Formula II



wherein

R^1 is hydrogen, chlorine or a methyl group;

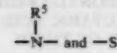
R^2 is a single bond or a methylene or ethylene group, the last two of which can be substituted by alkyl groups having 1 to 6 carbon atoms or phenyl groups;

R^3 and R^4 are independently an alkyl or cycloalkyl group having up to 12 carbon atoms, an aryl or aralkyl group having 6 to 12 carbon atoms, or R^3 and R^4 taken together with the carbon atom to which they are attached form a 5- to 12-membered carbocyclic ring;

(b) one gram mole of at least one nucleophilic group substituted compound having the formula:

$(HX)_nR$ Formula III

X is a nucleophilic group selected from



in which R^5 is a hydrocarbyl group selected from (1) an alkyl or cycloalkyl group having up to 18 carbon atoms and (2) an aryl or aralkyl group have 6 to 12 carbon atoms, R^5 being optionally substituted by at least one cyano or halo group;

R is a mono or polyvalent organic group that has a valence of n and is the residue of a nucleophilic group-substituted compound, $(HX)_nR$, in which X is defined above, the residue having a molecular weight up to 20,000, R being selected from (1) an aliphatic group having 2 to 20 carbon atoms and an aryl group having up to 20 carbon atoms, these groups optionally having one to four catenary heteroatoms of oxygen, nitrogen or sulfur, (2) polyoxyalkylene, (3) polyester, (4) polyolefin, (5) polyacrylate, and (6) polysiloxane, all optionally including at least one non-nucleophilic or nucleophilic group; and

n is an integer having a value of one to six.

4,485,237

INSENSITIVE POLYNITRAMINE COMPOUND

Rodney L. Willer, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 8, 1983, Ser. No. 473,300

Int. Cl.³ C07D *487/10*

U.S. Cl. 544—231 **2 Claims**

1. 2,4,8,10-tetranitro-2,4,8,10-tetraazaspiro[5.5]undecane.

4,485,238

PREPARATION OF ((6-SUBSTITUTED PHENOXY-2-PYRIDINYL)-METHYL)-3-(2,2-BIS(TRIFLUOROMETHYL)-1-ETHENYL)-2,2-DIMETHYLCYCLOPROPANE CARBOXYLATES

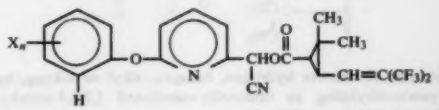
Donald L. Cox, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 331,411, Dec. 16, 1981, abandoned. This application Jul. 6, 1983, Ser. No. 511,411

Int. Cl.³ C07D *213/64, 491/04*

U.S. Cl. 546—300 **2 Claims**

1. A method for preparing a compound corresponding to the formula



wherein X independently represents hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, trifluoromethyl, 3,4-methylenedioxy, chloro, fluoro or bromo and n represents an integer of 1 or 2 which comprises reacting, under anhydrous conditions and at a temperature of from about minus 100° to about minus 20° C., from about 1 to about 2 moles of an appropriate cyano ((6-(substituted phenoxy)-2-pyridinyl)methyl)-2,2-dimethyl-3-cyclopropanecarboxyaldehyde with about one mole of tetrakis (trifluoromethyl)-1,3-dithioetane in the presence of triphenyl phosphine and a solvent.

4,485,239

2-(2,6-DIMETHYL-3,5-DIETHOXYCARBONYL-1,4-DIHYDROPYRIDINE-4-CARBOXAMIDE GLUTARIC ACID ITS DISODIUM SALT AND METHOD OF THEIR PREPARATION

Egils A. Biseniex; Gunar Y. Dubur, both of Riga; Yan R. Uldrikis, Elgava; Maris M. Veveris; Agris A. Kimenis, both of Riga, and Evgeny V. Ivanov, Leningrad, all of U.S.S.R., assignors to Institut Organicheskogo Sinteza Akademii Nauk Latviiskoi SSR, Riga, U.S.S.R.

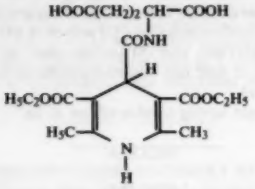
Filed Sep. 28, 1983, Ser. No. 536,899

Claims priority, application U.S.S.R., Oct. 25, 1982, 3505378

Int. Cl.³ A61K *31/455*; C07D *211/82*

U.S. Cl. 546—321 **2 Claims**

1. 2-(2,6-dimethyl-3,5-diethoxycarbonyl-1,4-dihydropyridine-4-carboxamide) glutaric acid of formula I



(I)

4,485,240

PROCESS FOR THE PREPARATION OF OPTIONALLY-SUBSTITUTED 1,2,3,4-TETRAHYDRO-9-CYANOMETHYLCARBAZOL-1-ONES

Heinz Bender, Frankfurt am Main; Veit Buch, Bad Vilbel; Rudi Beyerle, Frankfurt am Main, and Klaus Kühlein, Kelkheim, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Fed. Rep. of Germany

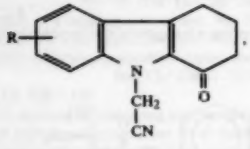
Filed Apr. 19, 1983, Ser. No. 487,020

Claims priority, application Fed. Rep. of Germany, May 11, 1982, 3217563

Int. Cl.³ C07D *209/86, 209/88*

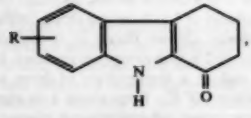
U.S. Cl. 548—449 **8 Claims**

1. A process for the preparation of optionally-substituted 1,2,3,4-tetrahydro-9-cyanomethylcarbazol-1-one of formula I



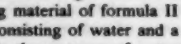
(I)

wherein R denotes hydrogen, halogen, alkyl or alkoxy, by cyanomethylating an optionally-substituted 1,2,3,4-tetrahydrocarbazol-1-one of the formula



(II)

wherein R has the meaning mentioned above, characterized in that the starting material of formula II is reacted, in a two-phase system consisting of water and a water-immiscible organic solvent, in the presence of a strong base and a known phase-transfer catalyst, with a cyanomethylating agent of formula



(III),

wherein R^1 denotes halogen or a radical of the formula $R^2—SO_2—O—$ and R^2 represents alkyl, phenyl or substituted phenyl.

4,485,241

REDUCTION OF INDOLE-2-CARBOXYLIC ACIDS TO INDOLINE-2-CARBOXYLIC ACIDS WITH LITHIUM, SODIUM, OR POTASSIUM IN AMMONIA

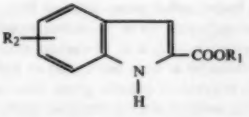
Henry G. Schouten, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Feb. 3, 1983, Ser. No. 463,429

Int. Cl.³ C07D *209/08*

U.S. Cl. 548—491 **16 Claims**

1. A process for reducing an indole-2-carboxylic acid or ester of the formula:



I

wherein R_1 is hydrogen or alkyl of 1–4 carbon atoms and R_2 is hydrogen, alkyl of 1–4 carbon atoms, alkoxy of 1–4 carbon atoms or hydroxy, to the corresponding indoline-2-carboxylic acid, which process comprises reacting said indole-2-carboxylic acid, dissolved in an inert solvent, with lithium, sodium, or potassium dissolved in liquid ammonia.

4,485,242

3[(ALKOXY)(4-AMINOPHENYL, 1-NAPHTHYL OR 1-BIPHENYLYL)METHYL]1H-INDOLES

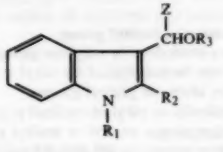
Paul J. Schmidt, Sharonville, and William M. Hung, Cincinnati, both of Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 127,648, Mar. 6, 1980, Pat. No. 4,307,898. This application Jul. 30, 1981, Ser. No. 288,495

Int. Cl.³ C07D *209/12*

U.S. Cl. 548—506 **6 Claims**

1. A compound having the formula

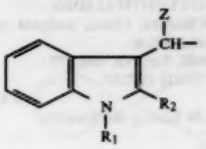


wherein:

R_1 is hydrogen or lower-alkyl;

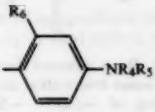
R_2 is hydrogen, lower-alkyl or phenyl;

R_3 is alkyl of 1 to 8 carbon atoms, di-lower-alkylamino-lower-alkyl, tri-lower-alkylammonium-lower-alkyl, benzyl or benzyl substituted in the phenyl ring with 1 or 2 lower-alkyl or lower-alkoxy groups, or R_3 is a substituent having the formula



and

Z is biphenylyl, naphthyl or a substituent having the formula



wherein:

R_4 and R_5 are independently lower-alkyl or benzyl, and

R_6 is hydrogen, lower-alkyl, lower-alkoxy, halo or di-lower-alkylamino.

4,485,243

PROCESS FOR THE PREPARATION OF A 2-ALKYLPYRROLE

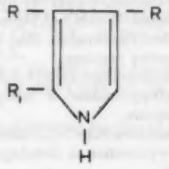
Roland E. van der Stoel, Buchten; Petrus H. J. Janssen, Geleen, and Cornelis G. M. van de Moesdijk, Elsloo, all of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Jun. 1, 1982, Ser. No. 383,961

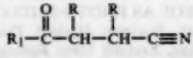
Claims priority, application Netherlands, Jun. 2, 1981, 8102656

Int. Cl.³ C07D *291/04*

U.S. Cl. 548—564 **6 Claims**

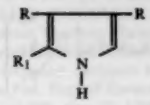


1. A process for the preparation of a 2-alkylpyrrole from a 4-oxoalkanenitrile of the formula



wherein R_1 represents an alkyl group with 1–3 carbon atoms and the two R groups independently represent hydrogen or an alkyl group with 1–2 carbon atoms,

which comprises contacting said nitrile at a temperature from 150° to 350° C., in the gas phase and in the presence of hydrogen with a catalyst containing a metal from group VIII or group Ib of the periodic system of elements whereby a reaction mixture is formed containing a 2-alkylpyrrole of the formula



wherein R_1 and R have same meaning stated above.

4,485,244

THERMAL PROCESS FOR THE LIQUEFACTION OF AROMATIC HYDROCARBON OXIDATION RESIDUES AND RECOVERY OF ACETIC ACID

Joseph D. Fox; George E. Kuhlmann, both of Naperville, and John G. Hundley, St. Charles, all of Ill., assignors to The Standard Oil Company, Chicago, Ill.

Filed Nov. 3, 1982, Ser. No. 438,742

Int. Cl.³ C07D *307/89*

U.S. Cl. 549—245 **13 Claims**

1. A process for decarboxylation, dehydrating and forming anhydrides from a mixture of water insoluble aldehyde-, carboxy-, methylol-, keto-substituted benzene and toluene moieties derived as oxidation process residues in the oxidation of paraxylene, metaxylene, orthoxylene and pseudocumene to their corresponding di or tricarboxylic acids at elevated temperatures in the presence of manganese, bromine and metal catalyst which process comprises heating such a mixture in the absence of an externally added catalyst at a temperature of about 500° to about 600° F. to produce a fluidizable solid and recovering therefrom entrained hydrocarbon solvent.

4,485,245

HYDROGENATION OF CARBOXYLIC ACID ANHYDRIDES TO LACTONES OR ESTERS USING A RUTHENIUM TRICHLOROSTANNATE CATALYST

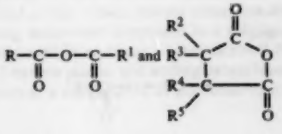
Chao-Yang Hsu, Media, and James E. Lyons, Wallingford, both of Pa., assignors to Sun Tech, Inc., Philadelphia, Pa.

Filed Oct. 29, 1982, Ser. No. 437,724

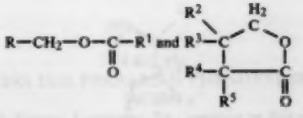
Int. Cl.³ C07D *307/20, 307/83*

U.S. Cl. 549—302 **9 Claims**

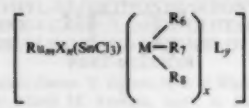
1. In a process for the selective hydrogenation of acyclic and cyclic carboxylic acid anhydrides to form esters or lactones which comprises reacting hydrogen, at elevated temperature and pressure, with the acyclic or cyclic carboxylic anhydride in homogeneous solution in the presence of a ruthenium catalyst, wherein the anhydride is selected from



to form



respectively, wherein R and R^1 independently are lower alkyl, cycloalkyl (C_5–C_{15}), or aryl, and R^2, R^3, R^4 and R^5 independently are hydrogen, lower alkyl, cycloalkyl (C_5–C_{15}), or aryl, and R^3 and R^4 when taken together may form a saturated ring, or aromatic ring, the improvement wherein the catalyst is a ruthenium trichlorostannate of the formula



wherein X is hydrogen, chlorine, bromine, iodine or lower alkyl; m is the integer 1 or 2; n is an integer of from 0 to 3 but when n is 2 or 3, X may be the same or different; M is P, As or Sb; R^6, R^7 and R^8 independently are lower alkyl, cycloalkyl(C_5–C_{15}), aryl, benzyl or a bidentate legand; x is an integer of from 1 to 4 but when x is 2 or more, M may be the same or different; L is a neutral ligand, olefin, CO, or $(R^9)_2CO$ wherein R^9 is lower alkyl; y is an integer of from 0 to 3 but when y is 2 or 3, L may be the same or different; and the sum of x and y is at least 2.

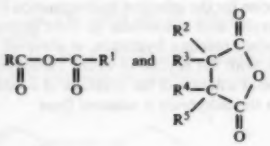
4,485,246

AMINE PROMOTED CATALYTIC HYDROGENATION OF CARBOXYLIC ACID ANHYDRIDES TO LACTONES OR ESTERS

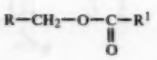
James E. Lyons, Wallingford, Pa., assignor to Sun Tech, Inc., Philadelphia, Pa.

Filed Oct. 29, 1982, Ser. No. 437,725
Int. Cl.³ C07D *307/20, 307/83*
U.S. Cl. 549—302 **12 Claims**

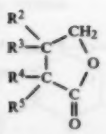
1. In a process for hydrogenating, in homogeneous reaction solution at elevated temperature and pressure, acyclic and cyclic carboxylic acid anhydrides to form esters or lactones in the presence of a ruthenium organophosphorus catalyst which contains or liberates a hydrogen halide during hydrogenation, the improvement which comprises providing in the reaction solution prior to or during the hydrogenation a basic organic amino compound which is non-destructive of the ruthenium organophosphorus catalyst, in an amount effective to react with the hydrogen halide which may form, whereby the rate of hydrogenation is increased; and wherein the carboxylic acid anhydrides are selected from



to form the ester



and the lactone



respectively, wherein R and R^1 independently are lower alkyl or cycloalkyl ($C_5$14 C_{15}; R^2, R^3, R^4 and R^5 independently are hydrogen, lower alkyl, cycloalkyl (C_5–C_{15}) or aryl; and wherein R_3 and R_4 taken together may form a saturated or unsaturated ring, or an aromatic ring.

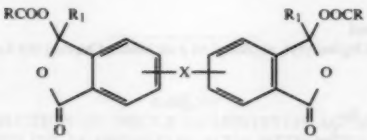
4,485,247

3-ALKANOYLOXYPHTHALIDES

Visweswara R. Durvasula, Cheshire, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 24, 1983, Ser. No. 460,177
Int. Cl.³ C07D *307/88*
U.S. Cl. 549—310 **5 Claims**

1. A 3-alkanoyloxyphthalide having the formula



wherein R represents lower-alkyl, R_1 is selected from the group consisting of hydrogen and linear lower-alkyl and X is selected from the group consisting of —CO—, —SO_2—, —O—, and a single bond.

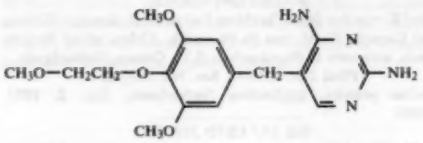
4,485,248

PROCESS FOR PRODUCING 2,4-DIAMINO-(3,5-DIMETHOXY-4-METHOXYETHOXY-BENZYL)-PYRIMIDINE

Leone Dall'Asta, Pavia, Italy, assignor to Proter S.p.A., Milan, Italy

Filed Jul. 19, 1982, Ser. No. 399,343
Claims priority, application Italy, Aug. 11, 1981, 23462 A/81
Int. Cl.³ C07D *239/49*
U.S. Cl. 544—325 **8 Claims**

1. A process for producing 2,4-diamino-(3,5-dimethoxy-4-methoxyethoxy-benzyl)-pyrimidine of formula:



(I)

characterised in that:

(1) 3,5-dimethoxy-4-methoxyethoxy-benzaldehyde is reacted with 2,4-diamino-6-hydroxy-pyrimidine;

(2) the 2,4-diamino-6-oxo-5-(3,5-dimethoxy-4-methoxyethoxy-benzylidene)-pyrimidine thus obtained is reduced by hydrogen under pressure;

(3) the 2,4-diamino-6-hydroxy-5-(3,5-dimethoxy-4-methoxyethoxy-benzyl)-pyrimidine is halogenated by normal halogenation agents;

(4) the 2,4-diamino-6-halo-5-(3,5-dimethoxy-4-methoxyethoxy-benzyl)-pyrimidine is dehalogenated by means of hydrogenolysis.

4,485,249

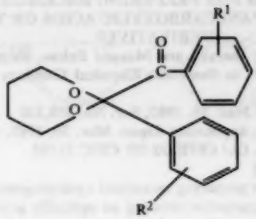
2-ACYLATED DIHYDRO-1,3-DIOXEPINS, PROCESS FOR THE PRODUCTION THEREOF AND USE THEREOF AS PHOTO-INITIATORS

Hans-Dieter Scharf, Roetgen; Herbert Fraüenrath, Aachen; Hans-Georg Heine, Krefeld; Hans Rudolph, Krefeld; Karl-Friedrich Neuhaus, Krefeld, and Otto Bendszus, Krefeld, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 7, 1983, Ser. No. 511,538
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1982, 3226617
Int. Cl.³ C07D *321/06*
U.S. Cl. 549—347 **3 Claims**

1. A compound corresponding to the following formula:

(V)



wherein

R^1 and R^2 independently represent a hydrogen atom, a C_1–C_4 alkoxy or alkyl radical, or a halogen atom.

4,485,250

PERFLUORODIOXOLE AND ITS POLYMERS

Edward N. Squire, Glen Mills, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 323,096, Nov. 19, 1981, Pat. No. 4,399,264. This application Sep. 23, 1982, Ser. No. 421,824

The portion of the term of this patent subsequent to Jul. 12, 2000, has been disclaimed.

Int. Cl.³ C07D *317/00, 323/02*

U.S. Cl. 549—455 **2 Claims**

1. Perfluoro-1,3-dioxole.

2. A process for making perfluoro-1,3-dioxole by the dechlorination of 4,5-dichloro-2,2,4,5-tetrafluoro-1,3-dioxolane, wherein 4,5-dichloro-2,2,4,5-tetrafluoro-1,3-dioxolane dissolved in tetrahydrofuran is contacted with magnesium in the presence of catalytic amounts of mercuric chloride and iodine, and the mixture is held at a reflux temperature, while perfluoro-1,3-dioxole is allowed to distill therefrom.

4,485,251

PROCESS FOR THE PREPARATION OF BIS(PERFLUOROALKYL-ALKYLTHIO)ALKANOIC ACIDS AND LACTONE INTERMEDIATES THEREOF

Robert A. Falk, New City, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

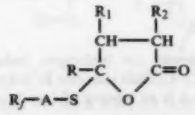
Filed Dec. 23, 1982, Ser. No. 452,531

Int. Cl.³ C07D *307/32*

U.S. Cl. 549—513 **5 Claims**

1. A perfluoroalkyl-alkylthio lactone of the formula

(IV)



wherein

R_f is perfluoroalkyl of 3 to 18 carbon atoms or perfluoroalkoxyperfluoroalkyl of 3 to 18 carbon atoms, or mixtures thereof;

A is alkylene of 1 to 6 carbon atoms;

R_1 is hydrogen or lower alkyl;

R_2 is hydrogen, lower alkyl, aryl or aryl substituted lower alkyl, where aryl in each case is phenyl or phenyl substituted by lower alkyl, lower alkoxy, halo, lower alkanoyl or alkanoyloxy; and

R is hydrogen or alkyl of 1 to 6 carbon atoms.

4,485,252

2-PHENYL-ALK-1-ENYL-CYCLOPROPANE-CARBOXYLIC ACID INTERMEDIATES

Rainer Fuchs, Wuppertal; Ingeborg Hammann, Cologne; Bernhard Homeyer, Leverkusen, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

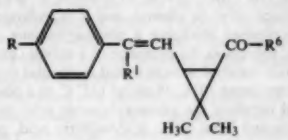
Division of Ser. No. 143,958, Apr. 25, 1980, Pat. No. 4,344,963. This application May 5, 1982, Ser. No. 375,061

Claims priority, application Fed. Rep. of Germany, May 23, 1979, 2920947

Int. Cl.³ C07C *69/743, 61/04*

U.S. Cl. 560—8 **2 Claims**

1. A 2-phenyl-alk-1-enyl-cyclopropane-carboxylic acid or derivative of the formula



in which

R is hydrogen or halogen,

R^1 is trifluoromethyl or alkyl of 1–2 carbon atoms, and

R^6 is halogen, OH or OC_1–C_4-alkyl.

4,485,253

PROCESS FOR PREPARING TERT-BUTYL ETHER OR ESTER CONTAINING POLYFUNCTIONAL ORGANIC COMPOUNDS

Christian Birr, Eichendorffstrasse 31, D-6906 Leimen, St. Ilgen, Fed. Rep. of Germany, assignor to Christian Birr, St. Ilgen, Fed. Rep. of Germany

Filed May 25, 1982, Ser. No. 381,989

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1981, 3122450

Int. Cl.³ C07C *149/40*

U.S. Cl. 560—9 **7 Claims**

1. Process for preparing amino acids having at least one functional group of medium nucleophilia selectively blocked by a tert.-butyl group, which process comprises dissolving the corresponding unblocked compound in a solution of concentrated sulfuric acid in an organic ether derived from polyols with up to 5 carbon atoms, and adding excess liquid isobutene to the solution at a temperature of not more than 5° C.

4,485,254

PROCESS FOR PREPARING PHENOXYBENZOIC ACIDS

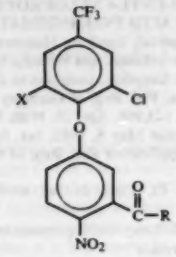
Charles M. Tanger, Levittown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 931,054, Aug. 4, 1978, Pat. No. 4,393,692. This application Sep. 30, 1981, Ser. No. 306,990

Int. Cl.³ C07C *79/46*

U.S. Cl. 560—21 **7 Claims**

1. A process for preparing a compound of the formula:



wherein R is ONa, OR^1, SR^1, or NR^1R^1 wherein R^1 is hydrogen, alkyl, substituted alkyl or alkenyl, and X is hydrogen or halogen which comprises oxidizing a phenoxytoluene in an appropriate protic solvent in the presence of a cobalt catalyst, a hydrogen peroxide catalyst activator and molecular oxygen at temperatures from about 70° C. to about 115° C. to a phenoxybenzoic acid and nitrating the phenoxybenzoic acid using a nitrating agent selected from nitric acid/sulfuric acid, potassium nitrate/sulfuric acid or nitric acid/sulfuric acid/acetic anhydride at temperatures from 0° to about 70° C. to produce the nitrophenoxybenzoic acid.

4,485,255

CARBONYLATION OF α,β-UNSATURATED ESTERS TO LINEAR SATURATED DIESTERS

Jean Jenck, Villeurbanne, France, assignor to Rhone-Poulenc Chimie de Base, Curbevoie, France

Filed Nov. 29, 1982, Ser. No. 444,886

Claims priority, application France, Dec. 1, 1981, 81 22613

Int. Cl.³ C07C *67/38*

U.S. Cl. 560—193 **20 Claims**

1. A process for the preparation of a linear saturated diester having the structural formula (I):

$$R_3COO—CH_2—R_1)_p(CH_2)_2\ COOR_2 \qquad (I)$$

comprising reacting, in liquid phase, carbon monoxide and an alcohol of the formula R_3OH with an α,β-unsaturated ester having the structural formula (II):

$$CH_3—R_1)_p\ CH{=}CH—COOR_2 \qquad (II)$$

wherein said formulae (I) and (II), R_1 is an alkylene radical having up to 20 carbon atoms, or such radical substituted by one or two chlorine atoms or alkoxy substituents having up to 4 carbon atoms; R_2 is an alkyl radical having up to 12 carbon atoms, or such radical substituted by one or two hydroxyl substituents, an aralkyl substituent having from 7 to 12 carbon atoms, or a phenyl substituent; p is zero or one; and R_3 is defined as was R_2, and further wherein R_2 and R_3 may be identical or different; in the presence of (i) a catalytically effective amount of a metallic cobalt or cobalt compound catalyst, and (ii) a tertiary nitrogencontaining base.

4,485,256

DIMERIZING ACRYLATES TO HEXENEDIOATES USING RUTHENIUM COMPOUND CATALYSTS

Ronald J. McKinney, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 28, 1983, Ser. No. 470,537

Int. Cl.³ C07C *67/343*

U.S. Cl. 560—202 **27 Claims**

1. A process for making dialkyl hexenedioates in the absence of a hydrogen donor comprising dimerizing an alkyl acrylate of the formula, $H_2C{=}CH—COOR$, wherein R is an alkyl group of up to about 18 carbons, in the presence of a ruthenium catalyst whose formal oxidation state is lower than zero.

4,485,257

PROCESS FOR PREPARING RACEMIZED CYCLOPROPANECARBOXYLIC ACIDS OR THEIR DERIVATIVES

Gohfu Suzukamo, Ibaraki, and Masami Fukao, Shiga, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

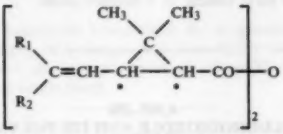
Filed Mar. 18, 1982, Ser. No. 359,320

Claims priority, application Japan, Mar. 30, 1981, 56-47818

Int. Cl.³ C07B *20/00*; C07C *51/56*

U.S. Cl. 562—401 **8 Claims**

2. A process for preparing racemized cyclopropanecarboxylic acids, which comprises treating an optically active cyclopropanecarboxylic acid anhydride as represented by the following formula,



wherein R_1 and R_2, respectively, designate a hydrogen atom or an alkyl group having 1 to 4 carbons, or, when taken together with the carbon atom to which they are attached, represent a cycloalkylidene group consisting of from 4 to 6 carbon atoms, with iodine in the presence or absence of an inert solvent at a temperature of from about −50° C. to the boiling point of the reaction system, and hydrolyzing the treated mixture to obtain the corresponding racemized cyclopropanecarboxylic acid.

4,485,258

PHARMACEUTICALLY ACTIVE (3-AMINOPROPOXY)BIBENZYL DERIVATIVES

Ryoji Kikumoto, Machida; Harukazu Fukami, Yokohama; Hiroto Hara; Kunihiro Ninomiya, both of Machida, and Mamoru Sugano, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

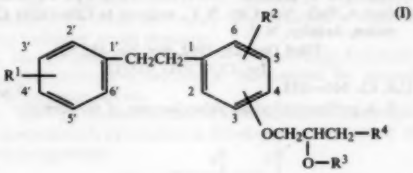
Filed Jul. 29, 1982, Ser. No. 403,119

Claims priority, application Japan, Aug. 20, 1981, 56-130704

Int. Cl.³ C07C *59/68*

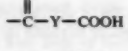
U.S. Cl. 562—471 **13 Claims**

1. A (3-aminopropoxy)bibenzyl derivative of the formula (I):

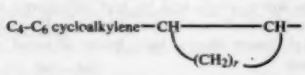


(I)

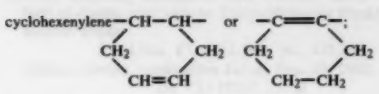
wherein R^1 and R^2 independently are hydrogen, halogen, C_1–C_5 alkyl, C_1–C_5 alkoxy or C_2–C_6 dialkylamino; R^3 is hydrogen, $—(CH_2)_n—COOH$ where n is an integer of 1 to 5, or

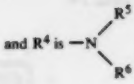


where Y is $—(CH_2)_m—$ (m is an integer of 1 to 3),



where r is an integer of 2 to 4, or





wherein R^5 and R^6 independently are C_1–C_8 alkyl or a pharmaceutically acceptable acid addition salt thereof.

4,485,259

PIGMENT GRINDING VEHICLE

Robert D. Jerabek, Glenshaw; Jeffrey G. Koren, Butler, and Mark W. Johnson, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 30, 1982, Ser. No. 430,304
Int. Cl.³ C07C *91/26*
U.S. Cl. 564—292 **9 Claims**

1. A quaternary ammonium group-containing material which is obtained from reacting:

(1) a 1,2-monoepoxide which is a glycidyl ether or ester containing an acyclic group of from about 4 to 24 carbon atoms, and

(2) an amine containing at least one organic group which contains an acyclic moiety of from about 8 to 30 carbon atoms,

in the presence of an organic acid and/or water; the reaction is conducted at temperatures ranging from room temperature to about 120° C.

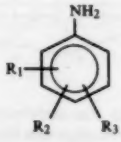
4,485,260

PREPARATION OF UNSYMMETRICAL DIPHENYLAMINES

Paul Szabo, Islington; Daniel E. Freeman, Mississauga; Trevor I. Martin, Burlington, and John M. Lennon, Mississauga, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

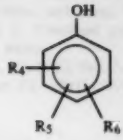
Continuation of Ser. No. 81,308, Oct. 3, 1979, abandoned. This application Mar. 22, 1982, Ser. No. 360,263
Int. Cl.³ C07C *91/44, 85/06*
U.S. Cl. 564—402 **10 Claims**

1. A process for the preparation of a substituted, unsymmetrical diphenylamine comprising reacting a primary arylamine having the general formula:



wherein R_1, R_2 and R_3 are selected from the group consisting of hydrogen, methyl, ethyl, n-propyl, iso-propyl, n-butyl, sec-butyl, tert-butyl, phenyl and alkyl substituted phenyl, and

a substituted phenol having the general formula:



wherein

R_4 is selected from the group consisting of methyl, ethyl, n-propyl, iso-propyl, n-butyl, sec-butyl, tert butyl, phenyl and substituted phenyl, said substituted phenyl having attached to the benzene ring an alkyl, phenyl or hydroxy group and

R_5 and R_6 are selected from the group consisting of hydrogen, hydroxy, methyl, ethyl, n-propyl, iso-propyl, n-butyl, sec-butyl, tert-butyl, phenyl and substituted phenyl, the substituted phenyl having attached to the benzene ring an alkyl, phenyl or hydroxy group

in the presence of a catalyst by heating at an elevated pressure and maintaining the alkyl substituted phenol in excess of the primary arylamine whereby self-condensation of the substituted amine is supressed.

4,485,261

PROCESS FOR PRODUCING METHYLAMINES

Yoshiro Ashina, Zushi, and Michio Fukatsu, Yokohama, both of Japan, assignors to Nitto Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1982, Ser. No. 367,022
Claims priority, application Japan, Apr. 10, 1981, 56-53888
Int. Cl.³ C07C *85/02*
U.S. Cl. 564—479 **10 Claims**

1. In a process for enhancing production of dimethylamine, wherein methanol, ammonia and a methylamine mixture containing trimethylamine are subjected to a gas phase catalytic reaction, and wherein said methylamine mixture has been produced in said process, the improvement which comprises conducting the gas phase catalytic reaction in two steps, the first step comprising subjecting the methylamine mixture containing trimethylamine and ammonia to a catalytic reaction in the presence of a porous solid acid catalyst having an average pore size or effective pore size of from 9 to 100 Å and selected from the group consisting of silica, γ-alumina, silica-alumina, Y-type zeolite and X-type zeolite thereby to reduce the quantity of the trimethylamine, at a temperature of 350° to 450° C. with a ratio of the number of nitrogen atoms to the number of carbon atoms (N/C) of the reactants of at least ½, the second step comprising subjecting at least a part of the product resulting from the first step and methanol to a catalytic reaction in the presence of ammonia and in the presence of a crystalline aluminosilicate catalyst having an effective pore size of 3 to 8 Å thereby to produce more dimethylamine.

4,485,262

S-BUTYL BIS(3-HYDROXYPROPYL) PHOSPHINE OXIDE

Diza P. Braksmayer, Cranbury, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed May 26, 1982, Ser. No. 382,255
Int. Cl.³ C07F *9/53*
U.S. Cl. 568—15 **1 Claim**

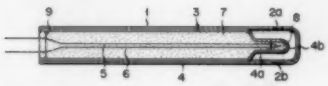
1. s-Butyl bis(3-hydroxypropyl) phosphine oxide.

4,485,263

THERMOCOUPLE INSTRUMENT

Masaru Itoyama, Kanagawa, and Takashi Kuze, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 17, 1982, Ser. No. 419,602
Claims priority, application Japan, Sep. 29, 1981, 56-154231
Int. Cl.³ H01L *35/02*
U.S. Cl. 136—230 9 Claims



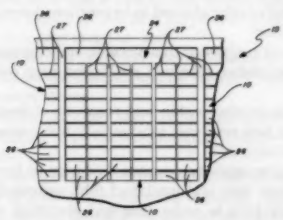
1. A thermocouple instrument comprising:
a thermocouple element formed of two dissimilar conductors joined at the ends thereof;
a rigid inner protecting metal tube for containing said thermocouple together with an insulating material and electrically insulated from said thermocouple element via the insulating material; and
a rigid outer protecting metal tube of the metal forming said inner protecting metal tube is not lower than the thermal expansion coefficient of the metal forming said outer protecting tube, wherein the inner protecting metal tube is rigidly mounted and retained within the outer protecting metal tube due to the thermal expansion of the inner protecting metal tube at high temperatures.

4,485,264

ISOLATION LAYER FOR PHOTOVOLTAIC DEVICE AND METHOD OF PRODUCING SAME

Masatsugu Izu, Southfield, and Prem Nath, Rochester, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Nov. 9, 1982, Ser. No. 440,386
Int. Cl.³ H01L *31/04, 31/18*
U.S. Cl. 136—244 19 Claims



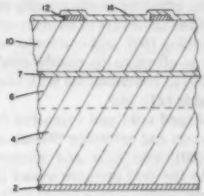
1. A large area photovoltaic cell comprising a matrix of electrically-isolated, small area segments, each segment including; (a) an electrically conductive common substrate, (b) a semiconductor body atop the electrically-conductive substrate; and (c) a transparent, electrically-conductive coating atop the semiconductor body; the improvement comprising in combination:
a pattern of electrically-insulating material atop said semiconductor body, said pattern dividing said large area cell into said matrix of small area segments, the thickness of said pattern of insulating material being substantially greater than the thickness of said transparent, electrically-conductive coating, whereby said insulating material separates and electrically isolates said adjacent small area segments.

4,485,265

PHOTOVOLTAIC CELL

Roy G. Gordon, Cambridge, and Sarah Kurtz, Somerville, both of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed Nov. 22, 1982, Ser. No. 443,394
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—255 10 Claims



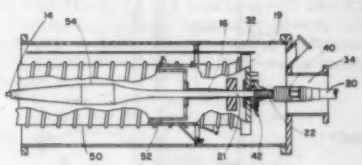
1. In a photovoltaic cell structure containing a transparent, electrically conductive first layer of metal oxide and a light-absorbing semiconductive photovoltaic second layer, the improvement comprising an electrically conductive layer consisting of from 0.5 to 4 nm in thickness of transition metal nitride, carbide or boride interposed between said first and second layers.

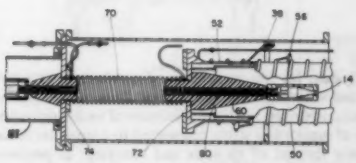
4,485,266

TERMINATION FOR A SUPERCONDUCTING POWER TRANSMISSION LINE INCLUDING A HORIZONTAL CRYOGENIC BUSHING

Kurt F. Minati, Northport; Gerry H. Morgan, Patchogue; Andrew J. McNerney, Shoreham, and Felix Schauer, Upton, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 29, 1982, Ser. No. 403,220
Int. Cl.³ H01B *7/34, 17/26*
U.S. Cl. 174—15 CA 8 Claims





5. A termination vacuum enclosure (32) enclosing a cryogenic bushing (60), a portion of a superconducting power transmission cable (21) that is effective to transmit electrical power from a cryogenic region through said bushing to a region having a higher temperature, and a coolant filled pressure vessel (50) that is operably mounted within said vacuum enclosure, said enclosure and enclosed components being characterized by the improvements comprising:
(a) current carrying means (52) disposed within said pressure vessel and operable to conduct electric current from an outer conductor (16) that is disposed around the cable (21) to

an outer conductor assembly (70) mounted around a temperature transition section (86) of said bushing (60);

(b) a stress cone (54) disposed around a portion of said cable (21) and coaxially positioned within in and radially spaced from said current carrying means (52), said stress cone being electrically connected to said current carrying means (52);

(c) a connector assembly (56) that is disposed within said pressure vessel (50), between said stress cone (54) and said bushing (60), and being effective to electrically connect an inner conductor (14) of the cable (21) to an inner conductor assembly (80) of the bushing (60); said connector assembly having an opening that is effective to enable coolant within the pressure vessel (50) to communicate with said inner conductor (14) of the cable (21); and

(d) a conically shaped cold end extension (92) and a conically shaped warm end extension (94) on opposite ends of said bushing (60), said cold end extension (92) being mounted within the said pressure vessel (50) and in leak tight sealing relationship with a flange (72) on the pressure vessel 50, said warm end extension (94) being mounted outside of vacuum enclosure (32) in said region of higher temperature, and in sealing relationship with a second flange (74) on said vacuum enclosure (32).

4,485,267

SYSTEM FOR THE SUSPENSION OF THE CONDUCTORS OF A BUNDLE IN VERY HIGH VOLTAGE ELECTRIC LINES

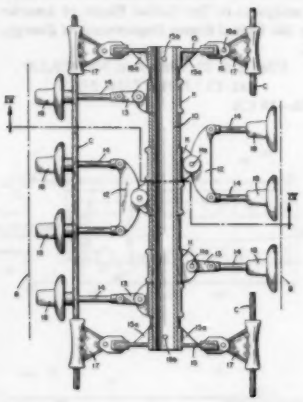
Giovanni Polizzotto, Milan, Italy, assignor to Iselfa S.r.l., Italy

Filed Oct. 21, 1982, Ser. No. 435,546

Claims priority, application Italy, Oct. 21, 1981, 24613 A/81

Int. Cl.³ H02G 7/06, 7/20

U.S. Cl. 174—43 **12 Claims**



1. System for the suspension of conductors in a bundle, in high and very high voltage electric lines, of the type wherein the line comprises, in correspondence of each suspension point, a pair of supporting struts connected to a suspension insulating catenary formed of tie rods and carrying, at predetermined mutual distances, supports for the suspension of conductors in a bundle, each support being connected to two oblique branches of the catenary, subjected to tensive forces in diverging directions, each suspension support being formed by a central elongated rigid core, having its axis parallel to the longitudinal axis of the bundle of conductors, onto which core there is fixed at least one set of radially positioned brackets, each for the support of a sub-conductor of the bundle, the tie rods forming said branches of the insulating catenary being furthermore directly anchored onto said core, so that said diverging directions of the tensive forces of the tie rods may pass through the axis of the central elongated rigid core.

4,485,268

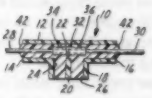
SEALING DEVICE FOR AN ELECTRICAL CONNECTOR AND METHOD THEREFOR

Morton R. Kaplan, Santa Barbara, Calif., assignor to Minnesota Mining and Manufacturing, St. Paul, Minn.

Filed Jun. 13, 1983, Ser. No. 503,855

Int. Cl.³ H02G 15/08; A61N 1/04

U.S. Cl. 174—84 C **16 Claims**



1. A sealing device for a wire splice, comprising:

an insulative tube adapted to receive said wire splice;

a reservoir positioned transverse to and communicating with said insulative tube; and

a septum within said reservoir at least partially dividing said reservoir substantially transverse to said insulative tube;

whereby an insulative viscous fluid may be placed within said reservoir and may be forced from said reservoir into said insulative tube for surrounding said wire splice.

12. A connector for electrical wires, comprising:

a conductive tube adapted to receive the ends of said electrical wires to be connected and capable of being crimped onto said electrical wires;

an insulative tube adapted to be positioned over said conductive tube;

a reservoir positioned transverse to and communicating with said insulative tube and positioned near said conductive tube;

a septum located within said reservoir at least partially dividing said reservoir substantially transverse to said insulative tube; and

whereby an insulative viscous fluid may be forced from said reservoir into said insulative tube surrounding said conductive tube in order that said electrical wires may be electrically connected and insulated.

16. A method of making an insulated implantable electrical connection, comprising the steps of:

slipping an insulator, said insulator consisting of insulative tube with a reservoir positioned transverse to and communicating with said insulative tube with an internal septum located within said reservoir at least partially dividing said reservoir transverse to said insulative tube, over a first wire to be connected;

inserting said first wire to be connected and a second wire to be connected into a crimpable, conductive tube;

crimping said conductive tube to both said first and second wires;

repositioning said insulative tube over said conductive tube; and

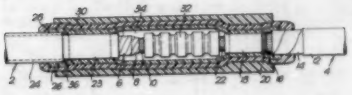
forcing an insulative viscous fluid from said reservoir into said insulative tube to surround said conductive tube.

4,485,269

CABLE SEALING

Norman R. Steinberg, Munich, Fed. Rep. of Germany, assignor to Raychem GmbH, Putzbrunn, Fed. Rep. of Germany

Filed Apr. 2, 1982, Ser. No. 365,086
Claims priority, application United Kingdom, Apr. 7, 1981, 8112013
Int. Cl.³ H02G 1/14, 15/08
U.S. Cl. 174—84 R 17 Claims



1. A method of sealing an end of a mass-impregnated paper insulated cable, the cable sheath being stripped from the end of the cable to expose a length of the mass-impregnated paper insulation and to expose a conductor of the cable, said method comprising:

(a) positioning a first dimensionally recoverable polymeric sleeve such that it overlies the end region of the cable sheath and the adjacent portion of the mass-impregnated paper insulation;

(b) causing the first polymeric sleeve to recover so that it encloses the end region of the cable sheath and the adjacent portion of the insulation leaving the end region of the insulation unenclosed;

(c) applying a sealant material over the unenclosed insulation and the adjacent end region of the first polymeric sleeve;

(d) positioning a second dimensionally recoverable polymeric sleeve such that it overlies the sealant material and the adjacent region of the first polymeric sleeve beyond the applied sealant material; and

(e) causing the second polymeric sleeve to recover so that it encloses the sealant material and the adjacent region of the first polymeric sleeve;

said first polymeric member and said sealant material being substantially unaffected by the mass impregnating paper insulation of the cable.

15. A mass-impregnated paper insulated cable having an end thereof sealed to enclose the mass-impregnated paper insulation, said cable having the cable sheath stripped from the end thereof to expose a length of the mass-impregnated insulation and to expose a conductor thereof, the mass-impregnated insulation being enclosed in:

(a) a first recovered polymeric sleeve which extends over the end region of the cable sheath and the adjacent portion of the mass-impregnated paper insulation, the end region of the insulation being unenclosed by the first polymeric sleeve;

(b) a sealing material over the unenclosed end region of the insulation and over the adjacent end region of the first polymeric sleeve; and

(c) a second recovered polymeric member enclosing the sealant material and the adjacent region of the first recovered polymeric sleeve beyond the sealant material;

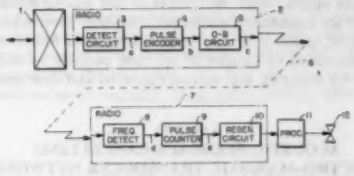
said first polymeric member and said sealant material being substantially unaffected by the mass-impregnated paper insulation of said first cable.

4,485,270

METHOD FOR TRANSMITTING A CHARGING SIGNAL

Isao Honda, Tokyo, and Takafumi Shimizu, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 20, 1982, Ser. No. 419,926
Claims priority, application Japan, Sep. 30, 1981, 56-155922
Int. Cl.³ H04Q 7/04; H04M 15/00
U.S. Cl. 179—2 E 6 Claims



1. A method for transmitting a charging signal over a radio link between an exchange and a telephone system, comprising the steps of:

detecting the charging signal sent from the exchange and generating a detected signal;

encoding the detected signal into a pulse code signal comprising a plurality of continuous pulses;

modulating the pulse code signal into a modulated pulse code signal with a carrier comprising a frequency signal outside a voice transmitting frequency band;

transmitting the modulated pulse code signal to the telephone system via the radio link after the modulated pulse code signal is superimposed onto a voice signal;

detecting the demodulating the modulated pulse code signal into the pulse code signal in the telephone system;

producing a counted value by counting the continuous pulses of the pulse code signal; and

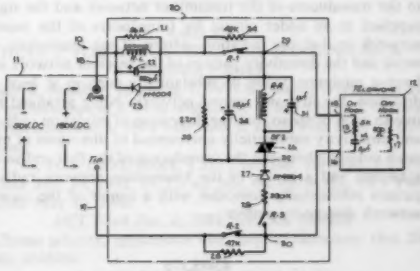
regenerating the charging signal, when the counted value reaches a predetermined value.

4,485,271

REMOTELY ACTUABLE LINE DISCONNECT DEVICE

Thomas B. Norling, Kendall Park; Joseph H. Polkowski, Lakewood; Jeffrey A. Poulsen, Fords, and Daniel E. Robinson, Metuchen, all of N.J., assignors to GK Technologies, Incorporated, Greenwich, Conn.

Filed Jul. 30, 1982, Ser. No. 403,569
Int. Cl.³ H04B 3/46; H04M 3/22
U.S. Cl. 179—19 12 Claims



1. A line disconnect device for insertion in a two-wire communication loop near the far end of said loop and operable from the near end of said loop to isolate said far end of said loop and any equipment connected to said far end of the said loop, wherein said equipment has at least one operating mode in which the impedance reflected into said loop by said equipment is conductive for direct current and of relatively low

value, and another mode in which for direct current said impedance is at least substantially higher, said device comprising in combination first means insertable in series with one of said two wires and including second means actuable only in response to current of one polarity in excess of a given magnitude for altering its condition from a first to a second state; third means under the control of said second means and insertable in series with said two wires for disconnecting said far end of said loop whenever said second means is in said second state, and fourth means under the control of said second means and arranged for connection across said two-wire loop whenever said second means is in said second state, said fourth means being responsive to current of opposite polarity to said one polarity for restoring said second means to said first state.

4,485,272

ACOUSTIC FEEDBACK CANCELLING ELECTRO-ACOUSTIC TRANSDUCER NETWORK

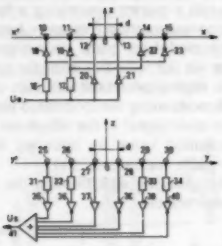
Tuan K. Duong, Elancourt; Emmanuel Lefort, Montigny le Bretonneux, and Maurice G. Bellanger, Paris, all of France, assignors to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Mar. 3, 1982, Ser. No. 354,478

Claims priority, application France, Apr. 1, 1981, 81 06530

Int. Cl.³ H04M *1/20*; H04R *3/02*

U.S. Cl. 179—81 B **27 Claims**



17. An electroacoustic transducer arrangement comprising: an acoustic-wave transmitter including a first network of at least two omnidirectional electroacoustic transducers arranged on a line x'x and symmetrically about a point **0** on said line, an acoustic-wave receiver including a second network of at least two omnidirectional electroacoustic transducers arranged in a line dnd symmetrically disposed relative to said point **0**, means for controlling the phase and amplitude of the signals applied to the transducers of the transmitter network and the signals supplied to an adder circuit by transducers of the receiver network so that the radiation pattern of the transmitter network and the directivity pattern of the receiver network each have a minimum value of substantially zero in at least one direction, the first and second networks being arranged relative to each other so that the directions of minimum radiation and directivity substantially correspond to directions of maximum coupling between the transducers of the first and second networks and a center of the transmitter network radiation pattern substantially coincides with a center of the receiver network directivity pattern.

4,485,273

INTERCOM ADAPTER FOR TELEPHONES

Everhard H. B. Bartelink, 15 Ridge Rd., Concord, N.H. 03301

Filed Sep. 23, 1982, Ser. No. 422,037

Int. Cl.³ H04M *1/72*

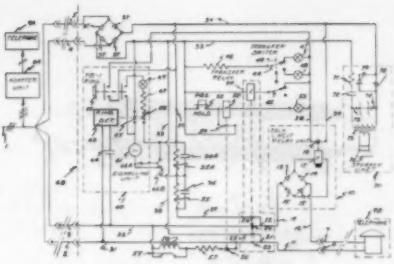
U.S. Cl. 179—81 R **18 Claims**

1. An intercom adapter for connecting a line from a user's communications terminal to one of either the line to a communications switching center or a local intercom line, said adapter comprising:

off-hook detection means for detecting an off-hook condition in the communications terminal;

first control means for a user of the communications terminal to choose between connection of the communications terminal either to the remote communications center or connection to the intercom line; and

transfer means for transferring the communications terminal selectively between the remote communications center



and the intercom line, said transfer means being responsive to said off-hook detection means and said first control means such that the communications terminal is connected to the intercom line when both the user has selected the intercom and an off-hook condition is detected and the communications terminal is connected to the remote communications center when at least one of these two conditions is not met.

4,485,274

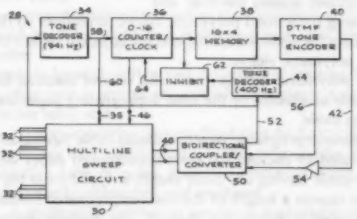
SHARING AN AUTOMATIC DIALER AMONG PLURAL COMMUNICATION CHANNELS

Frank C. Jordon, Huntington Beach, and Knute H. Josifek, Fountain Valley, both of Calif., assignors to International Communication Operations Research, Huntington Beach, Calif.

Filed Sep. 7, 1982, Ser. No. 415,287

Int. Cl.³ H04M *1/26*

U.S. Cl. 179—90 BD **10 Claims**



1. Apparatus for activating an automatic dialer from any of a plurality of telephone lines, comprising:

primary terminal means connectible to an automatic dialer;

means for sequentially coupling the primary terminal means to a plurality of telephone lines for bidirectional transmission;

means for sensing a preselected triggering signal on each telephone line when it is coupled to the primary terminal means;

means for inhibiting the sequential coupling means in response to sensing of the triggering signal, leaving the line carrying the signal coupled to the primary terminal means; and

means for activating the automatic dialer to transmit a first

preselected sequence of dialing signals along said line in response to sensing of the triggering signal.

4,485,275

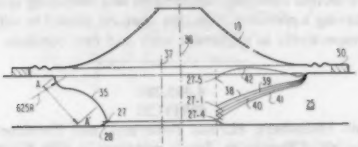
INVERTED HORN LOUDSPEAKER

Uolevi L. Lahti, 428 Fort Denaud Rd., La Belle, Fla. 33935

Filed Mar. 25, 1982, Ser. No. 361,648

Int. Cl.³ H04M *1/02*; H04R *1/30*

U.S. Cl. 179—115.5 H **8 Claims**



1. A loudspeaker comprising:

an enclosure,

a motor, a diaphragm coupled thereto and a support for said diaphragm, all located within said enclosure,

an inverted horn coupling a surface of said diaphragm through said enclosure,

said diaphragm located in said enclosure with a center line which is parallel to but offset from a center line of said horn.

4,485,276

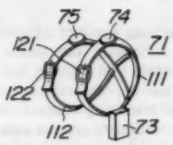
PERSONAL AUDIO DEVICE

Masaaki Sato, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 233,290, Feb. 10, 1981, abandoned. This application Aug. 3, 1983, Ser. No. 519,885

Int. Cl.³ H04M *1/05*

U.S. Cl. 179—157 **5 Claims**



1. A personal audio device comprising a holster type flexible supporting structure arranged to be mounted on both shoulders of a listener, an audio apparatus provided to the supporting structure, and a speaker provided on the upper portion of the supporting structure corresponding to the shoulders of the listener, said supporting structure being arranged to have a front and a back and being connected only across the back so as to leave the front of the neck and chest of a listener free.

4,485,277

APPARATUS FOR TRANSMITTING AND/OR RECEIVING BALANCED SIGNALS ON A TWO-WIRE TELECOMMUNICATION LINE

Morris L. Minch, Coral Springs, and Theodore W. Wagner, West Palm Beach, both of Fla., assignors to Siemens Corporation, Iselin, N.J.

Continuation-in-part of Ser. No. 137,810, Apr. 4, 1980, abandoned. This application Feb. 18, 1982, Ser. No. 350,028

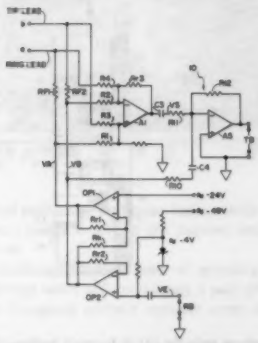
Int. Cl.³ H04B *1/58*

U.S. Cl. 179—170 NC **11 Claims**

1. A transformerless hybrid circuit arrangement for use in a subscriber line interface circuit of a telecommunication exchange for coupling a two-wire subscriber line with the transmitting and receiving branches, respectively, of a four-wire line of the exchange, said circuit arrangement comprising, in combination:

(a) a first operational amplifier having an inverting and a non-inverting input and an output, said non-inverting input thereof being connected to a first reference voltage and said output thereof being connected via a first resistor to one wire of said two-wire subscriber line and via a third resistor to the inverting input thereof;

(b) a second operational amplifier having an inverting and a non-inverting input and an output, said non-inverting input thereof being connected to a second reference voltage and to the receiving branch of the four-wire line of said exchange and said output thereof being connected via



a second resistor to the other wire of said two-wire subscriber line, via a fourth resistor to the inverting input thereof and via a fifth resistor to said inverting input of said first operational amplifier;

(c) a first summing stage having four inputs and an output, two inputs thereof each being connected, via a respective circuit path, to a separate wire of said two-wire subscriber line and two other inputs thereof each being connected, via a respective circuit path, to the output of a separate one of said operational amplifiers, and said output of said summing stage being connected to the transmitting branch of the four-wire line of said exchange; and

(d) means for preventing incoming signals on said receive branch from appearing as outgoing signals on said transmit branch.

4,485,278

DEVICE FOR AUTOMATICALLY WINDING UP A FEEDER CABLE

Albert R. Schaller, Rilkeweg 1, 7573 Sinzheim; Werner Vetter, Peterswiesenweg 5, 7130 Mühlacker 7, and Dieter J. Steiner, Mohrenstrasse 3, 7501 Marxzell 1, all of Fed. Rep. of Germany

PCT No. PCT/DE81/00001, § 371 Date Jun. 18, 1982, § 102(e) Date Jun. 18, 1982, PCT Pub. No. WO82/01623, PCT Pub. Date May 13, 1982

PCT Filed Jan. 2, 1981, Ser. No. 395,058

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1980, 3040664

Int. Cl.³ H02G *11/02*; B65H *75/30*

U.S. Cl. 191—12.4 **10 Claims**

1. Apparatus for automatically winding up an electrical cable on a drum by means of a coil spring stressed with the unwinding of the cable, said drum having a hallow hub, the drum being journalled with its hollow hub in two sleeve bearings of different diameters formed on a pivot spindle fixed on a base plate, two sliding contact elements comprised of contact rings and contact springs being arranged between said bear-

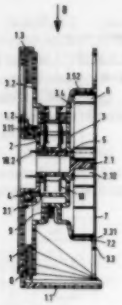
ings, the contact rings of said elements being arranged non-rotatably on the pivot spindle and the contact springs being arranged on a contact carrier insertable in a recess of the hub, characterized through the features

(a) an opening of the hollow drum hub (3.1) facing the base plate (1) is provided with a collar (3.11),

(b) an outer drum flange (3.3) froms a central hollow space (3.4) for receiving a coil spring (6),

(c) a middle part of the hub (3.1) contains said recess (3.12) for the contact carrier (12) for said contact springs (13,21) and a pull relief (13.13) for the electrical cable (9),

(d) locking pawls (1.2) are formed in the base plate and engage the collar (3.11) of the hub (3.1) thereby to protect the drum (3) against axial drawing off from the pivot spindle (2),



(e) the pivot spindle (2) is formed hollow in a hub area, is formed solid in an end area and is provided with at least one slit (2.12) in said solid end area,

(f) the coil spring (6) is formed as a spiral spring with hook formed ends (6.1, 6.2) of which an inner hook end (6.2) is inserted in the slit (2.12) in the end area of the pivot spindle and an outer hook end (6.1) is inserted in an opening (3.6) on the wall of the hollow space (3.4),

(g) the contact carrier (12) is mounted in the recess (3.12) of the hub (3.1) so that the contact springs (13,21) engage the contact rings (10,20), and,

(h) the contact springs (13,21) engage opposing sides of the contact rings (10,20) so that contact pressures are applied only in the contact elements.

4,485,279

KEYBOARD SWITCH

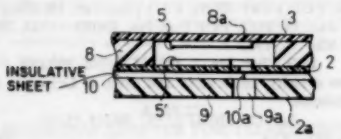
Moritoshi Nakamura, Miyagi, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 431,386

Claims priority, application Japan, Feb. 16, 1982, 57-20562[U]

Int. Cl.³ H01H *13/70*

U.S. Cl. 200—5 A **2 Claims**



1. A keyboard switch comprising:

(a) a base plate having a plurality of first vent holes;

(b) an insulating sheet mounted on said base plate and a plurality of slits located respectively in alignment with said first vent holes for preventing substantial passage therethrough of dirt or dust while permitting air to flow therethrough;

(c) a first substrate mounted on said insulating sheet and having a plurality of second vent holes respectively in alignment with said first vent holes and said slits, said first substrate supporting a plurality of first contacts;

(d) an insulating spacer mounted on said first substrate and having a plurality of spaces in which said first contacts are positioned, respectively, said first vent holes, said slits and said second vent holes communicating with said spaces; and

(e) a second substrate mounted on said insulating spacer and having a plurality of second contacts placed in said spaces respectively in alignment with said first contacts.

4,485,280

SWITCH

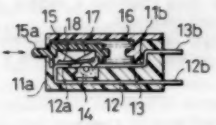
Makoto Matsubara; Hiroshi Tokuyama, and Yoshinori Watanabe, all of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

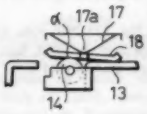
Filed Sep. 30, 1982, Ser. No. 431,378

Claims priority, application Japan, Jan. 29, 1982, 57-11904[U]

Int. Cl.³ H01H *15/00*

U.S. Cl. 200—16 C **9 Claims**





1. A switch comprising a pair of stationary contacts held in spaced relation in a housing and means including a slider mounted slidably within said housing and having a movable contact for holding said movable contact constantly in engagement with one of said stationary contacts and selective engagement with the other stationary contact according to the movement of said slider, a rotary contact and means holding said rotary contact rotatably on said stationary contact held in constant contact with said movable contact, said movable contact engaging said rotary contact.

4,485,281

PUSH TO START TIMING MECHANISM

Elmo W. Voland, Indianapolis; George W. Adams, Greenwood, and Steven W. Smock, Indianapolis, all of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Mar. 2, 1983, Ser. No. 471,535

Int. Cl.³ H01H *43/10*

U.S. Cl. 200—38 R **8 Claims**

1. A timing mechanism comprising

(a) a housing,

(b) a motor drive means including an output member,

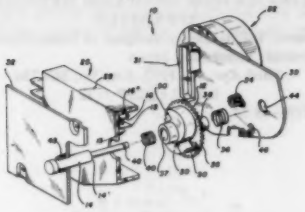
(c) an axially spring biased combination cam and gear assembly independently carried on an axially spring biased plunger extending through said housing, said gear engaging said output member,

(d) a switch means normally biased in an open position by said cam,

(e) first stop means limiting an axial movement of said combination, and

(f) second stop means limiting an axial movement of said plunger,

initial axial movement of said plunger causing axial movement of said combination cam and gear assembly to axially



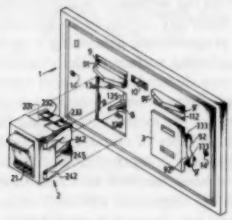
displace said cam to permit said switch means to close, continued axial movement causing said combination cam and gear assembly to engage said first stop means, and additional continued axial movement causing said plunger to engage said second stop means.

4,485,282

PLUG-IN TYPE OF SAFETY WALL SWITCH AND WALL OUTLET

Long-River Lee, 2nd Fl., No. 17, La. 90, Yu-Ming 6th Rd., Peitou, Taipei, Taiwan

Filed Jan. 28, 1983, Ser. No. 462,095
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—51 R **14 Claims**



1. A wall switch device comprising:

a power outlet assembly including a panel and a base plate being fixedly attached together and a switch niche assembly installed behind said base plate to be fixedly attached to a wall box on the wall;

a plug-in switch unit insertably positioned in said switch niche assembly, said plug-in switch unit having a portion supportably interacting with said panel and base plate; and

control means slidably positioned between said panel and said base plate adapted for releasably controlling said plug-in switch unit to be removed from said switch niche assembly,

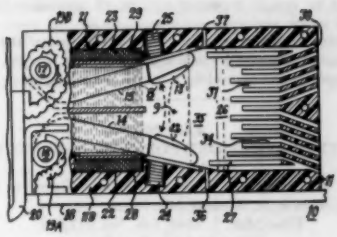
said plug-in switch unit includes a top cover for housing a switch button, a base having a bottom portion, said base adapted for installing a spring contact assembly, said base having a rectangular configuration and tapering off towards its bottom portion and having four salient lugs extending upward from edges of the bottom portion of said base toward a portion of said top cover at a given angle so as to acquire the inward and outward elasticity, said top cover having four channels on its two opposite outsides engaging with said four salient lugs in a dovetail manner so that said salient lugs can be completely tucked into said channels upon inserting said plug-in switch unit into said switch niche and spring out to be caught and fastened under said panel when said plug-in switch unit has been inserted therein.

4,485,283

CURRENT LIMITER UNIT

Ralph L. Hurtle, W. Hartford, Conn., assignor to General Electric Company, New York, N.Y.

Filed Aug. 27, 1982, Ser. No. 412,445
Int. Cl.³ H01H *9/30*
U.S. Cl. 200—144 R **12 Claims**



12. A method of providing a current limiter with minimum restricting between contacts within the current limiter, comprising the steps of:

providing an enclosure having a pair of opposing sidewalls and a pair of end walls and containing a pair of separable contacts on elongated contact support arms and an arc chamber;

venting one of said enclosure end walls to force an arc from between said contacts to move into said arc chamber and venting said enclosure sidewalls to relieve gas pressure during the occurence of said arc; and

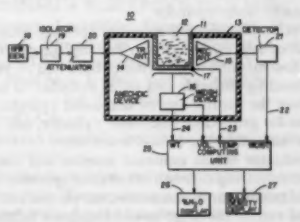
surrounding said contact arms with a plurality of magnetic laminations for concentrating a magnetic field upon a central portion of said contact arms with only a fringing magnetic field acting on said contacts for causing said contact arms to separate to form said arc without allowing said arc to restrike between said contacts.

4,485,284

APPARATUS AND PROCESS FOR MICROWAVE MOISTURE ANALYSIS

Ivars E. Pakulis, Arlington Heights, Ill., assignor to Advanced Moisture Technology, Inc., Wauconda, Ill.

Filed Jan. 11, 1982, Ser. No. 338,346
Int. Cl.³ H05B *9/06*
U.S. Cl. 219—10.55 R **18 Claims**



1. An apparatus for analyzing a sample of moisture containing material comprising:

first means for forming a chamber effectively preventing reflection of microwave energy;

second means defining a sample cell space for retaining a

moisture containing sample material, said second means being arranged to be disposed in said chamber;

third means for transmitting microwave energy through said second means in said chamber;

fourth means for receiving radiation transmitted through said space and providing a first output signal representative of water weight in a sample material therein;

fifth means coupled to said first and second means for providing a second output signal representing the weight of a sample material including the water weight retained in said space;

sixth means for receiving said first and second output signals and providing a third output signal representing the percent by weight moisture content of material retained in said space; and

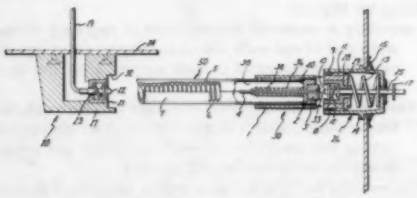
seventh means for measuring the temperature of the sample material retained in said space during a weight sensing operation and providing a fourth output signal.

4,485,285

QUARTERWAVE CHOKE FOR A MICROWAVE OVEN QUARTZ LAMP

Gregory W. Machesney, Oakdale, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Mar. 7, 1983, Ser. No. 472,899
Int. Cl.³ H05B 6/76
U.S. Cl. 219—10.55 D **10 Claims**



1. A microwave oven comprising:

a microwave oven having a microwave oven cavity in which microwaves are present at cooking power, the cavity having at least one wall;

a quartz lamp mounted in said microwave oven cavity, the lamp including a quartz tube, a resistance element mounted in the quartz tube and two power leads connected to said resistance element, at least one of said power leads connected through said at least one cavity wall;

a quarterwave choke mounted about said at least one power lead and further mounted in the interior of said microwave oven cavity on said at least one cavity wall at the point the power lead exits from said microwave oven cavity; said quarterwave choke comprising:

a metallic outer cylinder;

a metallic plug having a central aperture mounted in one end of said outer cylinder leaving the other end open;

a hollow metallic inner cylinder mounted on said plug and extending through said outer cylinder to its open end about the central axis of said outer cylinder;

means for grounding said outer cylinder, said inner cylinder and said plug to said microwave oven cavity;

a conductor means mounted interior said inner cylinder and extending through the central aperture of said plug; said conductor means connected on one end to a power lead and on the other to said resistance heating element; the gap between the outside diameter of said conductor and the inside diameter of said metallic inner cylinder being less than or equal to 0.020 inches;

sheath means for electrically insulating said conductor means from said inner cylinder and said plug;

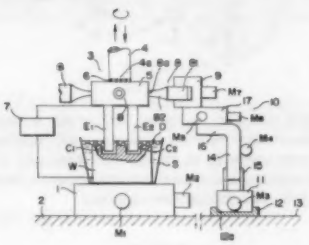
the distance between the open end of said outer cylinder and said metallic plug being substantially equal to a quarter of the wavelength of the microwave energy which may be present in said cavity.

4,485,286

MULTI-VIBRATOR HEAD EDM METHOD AND APPARATUS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Apr. 12, 1982, Ser. No. 367,734
Int. Cl.³ B23P 1/12
U.S. Cl. 219—69 M **34 Claims**



1. An EDM method wherein at least one machining electrode securely supported by an electrode support member, which is in turn carried by a spindle, is positioned in a machining relationship with a workpiece in the presence of a liquid dielectric and a succession of electrical discharges are effected between the electrode and the workpiece to electroerosively remove stock from the workpiece while the electrode and the workpiece are relatively displaced to advance the stock removal, thereby progressively generating a cavity in the workpiece with a machining surface of the electrode and wherein the said at least one electrode, the support member and an end portion of the spindle proximal to the support member constitute a tool assembly, the method comprising the steps of:

(a) disposing a plurality of vibrator horn assemblies, each of which individually comprises an electromechanical transducer and a horn member attached thereto, in such a manner that the respective vibration output faces of said horn members are disposed in engagement with a portion of said tool assembly at preselected different positions on the surface thereof; and

(b) individually energizing said electromechanical transducers in the respective horn assemblies to impart mechanical vibrations to said portion at said preselected positions thereon and to cause said vibrations to be directly transmitted through the body of said at least one electrode, thereby vibrationally activating said machining surface uniformly over the entire area thereof.

4,485,287

METHOD OF MAKING A HOLE IN A THICK-WALLED METAL MATERIAL

Masanobu Hamasaki, Takamatsu, and Fumikazu Tateiwa, Kagawa, both of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Sep. 16, 1982, Ser. No. 418,612
Claims priority, application Japan, Jun. 11, 1982, 57-101035
Int. Cl.³ B23P 1/06
U.S. Cl. 219—69 M **7 Claims**

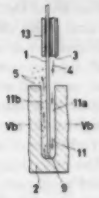
1. A process of making a hole in a metal material by forming an arc and by projection of pressurized fluid, the method comprising the steps of:

bringing the tip of an arc electrode wire into contact with said metal material while receiprocating said arc electrode

wire in a direction lateral to a length of said electrode wire;

applying between said metal material and said electrode wire an electrical potential sufficient to form an arc therebetween, whereby said electrode wire is consumed and a hole is formed in said metal material;

projecting a pressurized fluid towards the hole along one side of the exterior of said arc electrode wire; and



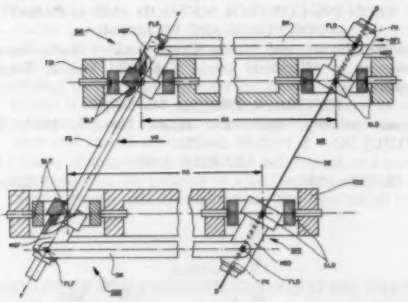
laterally reciprocating the arc electrode wire to thereby form an entry path and an exit path for said pressurized fluid within the hole, whereby the pressurized fluid is introduced into the hole through said entry path, passes to the bottom of the hole to entrain molten metal lumps and exits to the outside together with said lumps through said exit path.

4,485,288

WIRE GUIDING DEVICE FOR ELECTROEROSION FINISHING MACHINES

Rudolf Schneider, Reinach, Switzerland, assignor to Erowa AG, Reinach, Switzerland

Filed Nov. 1, 1982, Ser. No. 437,943
Claims priority, application Switzerland, Jan. 4, 1982, 6/82
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 W **12 Claims**



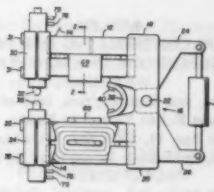
1. A wire guiding device for electroerosive finishing machines, in which two wire guides having longitudinally extending axes and having swinging bearings are arranged movable in relation to each other on respective support elements, and also supported swingable on the support elements, especially swingable to all sides, the wire guides being set by means of a coupling device with their guide axes aligned with each other, with the distinction that the coupling device has a guide member swingable with the support elements of the wire guides, of which the angular position is set through the relative displacement of the wire guides into agreement with the angular position of the wire electrode extending between the wire guides, and that this guide member is joined through swinging coupling gears with the wire guides, the guide member being arranged displaced in relation to the wire guides outside the finishing space of the workpiece, at least one of the swinging coupling gears having for a swinging coupling an axis at least approximately parallel to the direction of displacement of the guide member opposite the guide wires, and a rotary coupling member rigid against deformation, which is joined on the one hand with the guide member, and on the other with the respective wire guides, and wherein at least one of the swinging coupling gears has a parallelogram linking gear for the swinging coupling between the guide member and the wire guides around a transverse axis arranged at least approximately perpendicular to the direction of displacement of the guide member in relation to the wire guides.

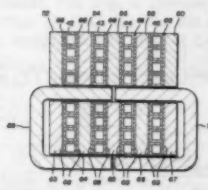
4,485,289

WELDING SYSTEM

Charles A. Schwartz, c/o C. A. Schwartz Company, 23366 Commerce Park Rd., Beachwood, Ohio 44122

Filed Jul. 29, 1982, Ser. No. 402,890
Int. Cl.³ B23K *11/10*
U.S. Cl. 219—90 **9 Claims**





6. In an electrical resistance type welding machine of the type including at least one linear transformer, the linear transformer being a structural part of the welding machine and including a primary coil and a secondary member associated therewith, the improved method of cooling said transformer comprising the steps of flowing a coolant only through said primary coil, and conducting heat grnerated in said secondary member through an electrically insulated, thermally conductive barrier to said primary coil, whereby both primary coil and said secondary member are cooled by the coolant flowing through said primary coil.

4,485,290

BONDING A WORKPIECE TO A BODY

Charles R. Fegley, Laureldale; Lorenz Regneth, Wyomissing, and Joseph A. Tamashasky, New Philadelphia, all of Pa., assignors to AT&T Technologies, Inc., New York, N.Y.

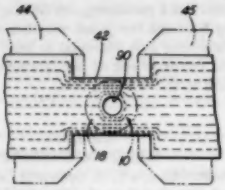
Filed Nov. 1, 1982, Ser. No. 438,229
Int. Cl.³ B23K *1/12*
U.S. Cl. 219—85 CA **8 Claims**

1. Apparatus for thermally bonding a conductive workpiece to a body, comprising:

first and second electrodes, each adapted for connection to a respective pole of a power supply for providing electrical current adequate for the bonding; and

means for conducting the current between the first electrode and the second electrode, including an element of a width and shape adapted for contacting the workpiece along portions thereof requiring heat for the bonding, said element being smaller in mass and made of a less conductive material than the workpiece to divert a desired amount of the current along a first path through and for concentrat-

ing current within the workpiece for developing substantial heat therewithin and said element also conducting current along a second path in the element to develop heat



in the element and transfer the same to the workpiece, the heat from both paths being sufficient to thermally bond at least a desired portion of the workpiece to the body.

4,485,291

METHOD FOR CONTROLLING THE POSITION OF WELDING ELECTRODE IN ARC-WELDING WITH WEAVING

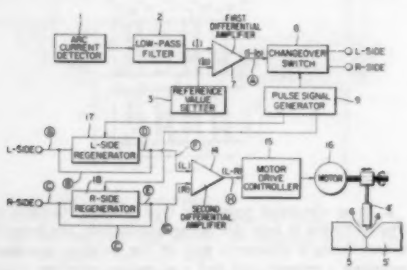
Hirokazu Nomura, and Yuji Sugitani, both of Tsu, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 11, 1983, Ser. No. 483,496

Claims priority, application Japan, Apr. 26, 1982, 57-68792

Int. Cl.³ B23K 9/12

U.S. Cl. 219—124.22 **1 Claim**



1. In a method for controlling the position of a welding electrode in arc-welding with weaving, which comprises:

directing a welding electrode substantially vertically toward a groove formed between objects of welding; continuously moving said welding electrode along the line of said groove while reciprocating said welding electrode in the width direction of said groove; feeding, on the other hand, a welding current to said welding electrode to produce an arc between the tip of said welding electrode and said groove to weld said objects of welding together along the line of said groove by means of the arc heat; continuously detecting values (I) of one of arc current and arc voltage of said arc during said welding; continuously calculating deviations (I−Io) of the thus detected values (I) from a previously set reference value (Io) of one of arc current and arc voltage for each one reciprocation of said welding electrode in the width direction of said groove; continuously calculating, relative to the vertical plane which passes through the center of amplitude of said one reciprocation of said welding electrode and is parallel to the line of said groove, a representative value (L') of left-side deviations (L) of said deviations (I−Io) and a representative value (R') of right-side deviations (R) of said deviations (I−Io); continuously calculating the difference (L'−R') between said representative value (L') of said left-side deviations (L) and said representative value (R') of said right-side deviations (R); and, controllably aligning the center of said amplitude of said one reciprocation of said welding electrode with the center of said groove in the width direction thereof so that said difference (L'−R') becomes null;

the improvement characterized by:

storing said left-side deviations (L) and said right-side deviations (R) at prescribed time intervals, said time intervals being in the range of from 1/1000 to 1/4000 second;

calculating at said prescribed time intervals when said welding electrode moves over the left side of said groove relative to said vertical plane, differences (L−R) between said left-side deviations (L) at said prescribed time intervals during said left-side movement of said welding electrode, on one hand, and said stored right-side deviations (R) at said prescribed time intervals during the immediately preceding right-side movement of said welding electrode over the right side of said groove relative to said vertical plane, on the other hand; and controllably aligning the center of said amplitude of said one reciprocation of said welding electrode with the center of said groove in the width direction thereof at said prescribed time intervals so that said differences (L−R) become null; and,

calculating at said prescribed time intervals, when said welding electrode moves over the right side of said groove relative to said vertical plane, differences (L−R) between said right-side deviations (R) at said prescribed time intervals during said right-side movement of said welding electrode, on one hand, and said stored left-side deviations (L) at said prescribed time intervals during the immediately preceding left-side movement of said welding electrode over the left side of said groove relative to said vertical plane, on the other hand, and controllably aligning the center of said amplitude of said one reciprocation of said welding electrode with the center of said groove in the width direction thereof at said prescribed time intervals so that said differences (L−R) become null.

4,485,292

ARC BLOWING CONTROL METHOD AND APPARATUS FOR PULSE ARC WELDING

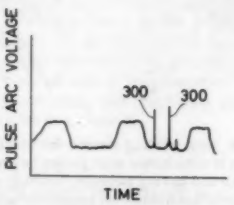
Masanori Mizuno, and Motoe Kitani, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1983, Ser. No. 548,756

Claims priority, application Japan, Nov. 5, 1982, 57-167712[U]; Nov. 5, 1982, 57-194322

Int. Cl.³ B23K 9/09

U.S. Cl. 219—123 **9 Claims**



1. An arc blowing control apparatus for pulse arc welding comprising: an arc current supply circuit including arc current control means; a detection circuit connected to an output of said arc current supply circuit for detecting electrically a stepped leader phenomenon and providing, when said stepped leader phenomenon is detected, a stepped leader signal; a switch unit operating in response to said stepped leader signal from said detection circuit for switching an output from a normal arc signal output to an arc blowing blocking signal output; and an arc blowing blocking circuit operating in response to the arc blowing blocking signal output from said switch unit for effecting an arc blowing suppression operation.

4,485,293

SHORT CIRCUIT TRANSFER ARC WELDING MACHINE

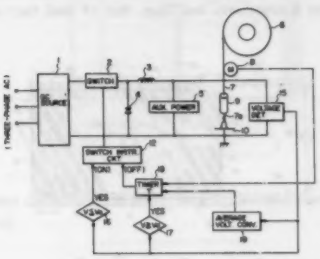
Youichiro Tabata; Shigeo Ueguri, both of Hyogo; Takaji Mizuno; Hirohisa Segawa, both of Aichi, and Seigo Hiramoto, Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1982, Ser. No. 366,614

Claims priority, application Japan, Apr. 10, 1981, 56-53933; Apr. 10, 1981, 56-53935; Apr. 10, 1981, 56-53936; Apr. 10, 1981, 56-53938; Aug. 31, 1981, 56-13664

Int. Cl.³ B23K 9/09

U.S. Cl. 219—130.31 20 Claims



1. A short circuit transfer arc welding machine, comprising:
a wire electrode which is fed towards a base metal;
a DC source for applying a voltage across said base metal and said wire electrode;
a switching circuit for interrupting said voltage;
a voltage detector for detecting a voltage developed across said base metal and said wire electrode;
a first comparator for determining when a detection voltage of said voltage detector reaches a voltage value corresponding to the short circuiting of said base metal and wire electrode;
a second comparator for determining when said detection voltage of said voltage detector reaches an arc discharge voltage;
switching circuit control means for closing said switching circuit in response to a signal from said first comparator and opening said switching circuit in response to a signal from said second comparator; and
a polarity change-over mechanism for inverting, at a predetermined rate, the polarity of a DC voltage which is applied between said wire electrode and base metal from said DC source.

4,485,294

DEVELOPER FOR PHOTOTHERMOGRAPHIC PAPER

David B. Rosenberg, Ann Arbor, Mich., assignor to Phoenix Medical Corporation, Ann Arbor, Mich.

Filed Mar. 18, 1983, Ser. No. 476,617

Int. Cl.³ H05B 1/02

U.S. Cl. 219—216 19 Claims

1. A developer for developing photothermographic paper,
paper drive means for moving the paper at different speeds along a path through a developing station,
a heater platen at said station and having a surface over which the paper is moved,
a plurality of electric resistance heaters disposed on said platen along the path of the paper,
means for developing a speed signal corresponding to the speed of the paper,
control mean responsive to said speed signal for activating selected number of said heaters in accordance with the value of said speed signal,
means for producing a temperature signal corresponding to the temperature of the platen at the location of each of the heaters,
said control means individually electrically energizing each of said heaters,
and being responsive to the respective temperature signals for controlling the energization of each of the activated

heaters so that the temperature at the respective location is maintained at a predetermined value,
whereby optimal development of said paper is obtained regardless of speed changes.

4,485,295

ELECTRICALLY HEATED FOR CUTTING FOAM PLASTIC MATERIAL

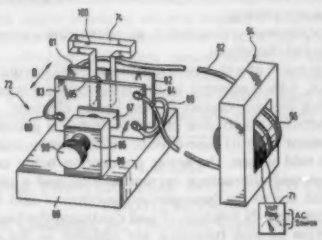
Christian Kellermeyer, Neuburg, Fed. Rep. of Germany, assignor to Tara GmbH, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,510

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1982, 8222457[U]

Int. Cl.³ B26F 3/08; H05B 3/06

U.S. Cl. 219—221 3 Claims



1. An apparatus for cutting thermoplastic foam material such as polyethylene foam or rigid polystyrene foam, including a cutting element connectible to a current source and a holder for the same, characterized in that the cutting element is made from a steel band having generally parallel longitudinal edges spaced from one another by the width dimension of said band and which width dimension is many times greater than the thickness of said band, said cutting element having two end portions each releasably held by said holder and connected through said holder to said current source, said holder for each of said end portions of said cutting element having a set of two jaws each having a clamping face engageable with a respective one of said longitudinal edges of the associated end portion of said cutting element and arranged generally perpendicular to said width dimension of said cutting element, and means for manually moving said two jaws for each end portion toward and away from one another between one position at which the associated end portion is clamped between said clamping faces of said jaws with said clamping faces in engagement with said longitudinal edges and a position at which the associated end portion is free for movement into and out of said jaws, said two end portions of said cutting element being located near and generally parallel to one another, each of said sets of two jaws

for each of said end portions including one stationary jaw and one movable jaw, a single manual operating member, and means interconnecting said single operating member to said movable jaws for moving both of said movable jaws in unison toward or away from their associated stationary jaws in response to operation of said single operating member.

4,485,296

AUTOMATIC TEMPERATURE CONTROL DEVICE FOR AN ELECTRIC APPLIANCE SUCH AS AN ELECTRIC BLANKET

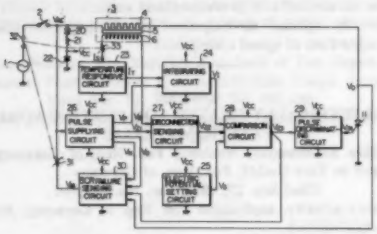
Yasukiyo Ueda, Nara; Hirokuni Murakami, Yamatokoriyama, and Takashi Iwasa, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 20, 1981, Ser. No. 266,592

Claims priority, application Japan, May 30, 1980, 55-73063; May 30, 1980, 55-73064; Jul. 31, 1980, 55-106102

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—505 **10 Claims**



1. An automatic temperature control device for an electric appliance comprising:

a heater element connected to an alternating current source to be fed therefrom;

a sensor made of a thermosensitive material having an impedance, which changes as the temperature varies, for detecting the temperature of said heater element;

a temperature responsive circuit including a grounded-base transistor with its base-emitter circuit connected in series with said sensor, the series connection being connected across said alternating current source, and a diode connected across the base-emitter junction of said transistor so that the P-N junction of said diode and the base-emitter junction of said transistor are coupled in the direction opposite to each other, whereby a collector current of said grounded-base transistor is used as a sensed signal;

an electric potential setting circuit for producing an electric potential for setting a desired temperature;

a comparison circuit for comparing an output signal of said temperature responsive circuit with an output signal of said electric potential setting circuit; and

switching means driven by an output of said comparison circuit and connected in series with said heater element for regulating the supply of electric power to said heater element.

4,485,297

ELECTRICAL RESISTANCE HEATER

Frederick G. J. Grise, Osterville, Mass., and William C. Stumphauzer, Elyria, Ohio, assignors to Flexwatt Corporation, Wellesley, Mass.

Continuation-in-part of Ser. No. 181,974, Aug. 28, 1980, abandoned. This application Aug. 21, 1981, Ser. No. 295,000

Int. Cl.³ H05B *3/34*

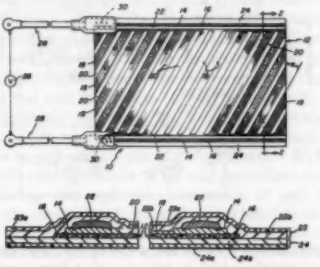
U.S. Cl. 219—528 **34 Claims**

1. An electrical heating device comprising:

a substrate having an electrically insulating surface

a semi-conductor pattern carried on said electrically insulating surface of said substrate, said pattern including a pair of stripes extending longitudinally of said device generally parallel to and spaced apart from each other, and a plurality of bars spaced apart from each other and extending between and electrically connected to said stripes, all of said plurality of bars being identical to each other and being identically oriented relative to said stripes and said bars and stripes being arranged so as to provide portions of said substrate intermediate said stripes and adjacent ones of said bars and closely adjacent to and spaced along the longitudinally-extending edges of said stripes that are free from said semi-conductor pattern;

a pair of elongated conductors, each of said conductors having a resistivity less than that of said bars and said



strips and overlying and in direct electrical engagement with one of said pair of stripes; and

an electrically insulating sealing sheet overlying at least one of said conductors and the said one of said pair of stripes associated therewith, said sheet being sealed at one side of said one conductor to said portions of said substrate closely adjacent said one conductor that are free from said semi-conductor pattern and at the opposite side of said one conductor to portions of said substrate closely adjacent the other longitudinal edge of said one conductor that are free from said semi-conductor pattern, whereby said sealing sheet holds said one conductor in tight face-to-face engagement with said one stripe.

4,485,298

PERFORATING STYLUS

Richard J. Stephens, St. Charles, Ill., and Harry H. Boucher, Dallas, Tex., assignors to Election Data Corporation, St. Charles, Ill.

Filed Jul. 14, 1982, Ser. No. 398,115

Int. Cl.³ G07C *13/00*

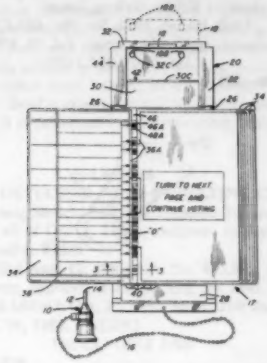
U.S. Cl. 235—50 R **9 Claims**

1. A stylus for use with a device for recording information on a record card by entering perforations on selected, prescored portions thereof, said device including a resilient template positioned beneath said record card and providing support therefor and including a plurality of openings aligned with the prescored portions of said record card for receiving said prescored portions when said perforations are engaged and removed from said record card, the stylus for making said perforations in said record card comprising:

a linear shaft having an end portion, said end portion including a recessed center section so as to form a sharp edge around the periphery of said end portion; and

a projection securely mounted in the recessed center section of the end portion of said shaft wherein the cross-sectional

dimensions of said projection are smaller than those of said shaft end portion and said projection includes a pointed



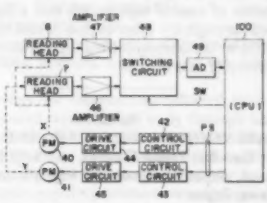
distal end therof extending beyond the end portion of said shaft.

4,485,299

WORK SLIP READING AND SUMMING DEVICE

Tsunehiko Imamoto, Yokohama, and Akio Yanase, Tokyo, both of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1982, Ser. No. 404,704
Claims priority, application Japan, Aug. 6, 1981, 56-123306
Int. Cl.³ G06K *7/10*
U.S. Cl. 235—377 **6 Claims**



1. A work slip reading and summing device comprising:

reading head means having

a first reading head for automatically reading a time base data line on which work contents for a printing machine are recorded according to kinds of work with a time axis by basing on a work graph which is prepared by recording the work contents for said printing machine, and for automatically reading item switching marks recorded on said work slip, and

a second reading head for automatically reading timing marks which represent said time axis;

reading mechanism having a processing circuit and a writing head to sum up total periods of time separately according to said kinds of work and said items so as to print out said total periods of time on said work slip by basing on data read by said first and second reading head;

operation control circuit for summing up total periods of time separately according to said kinds of work and said item;

operation panel having display means which displays said total time, and placing plate for placing said work slip thereon;

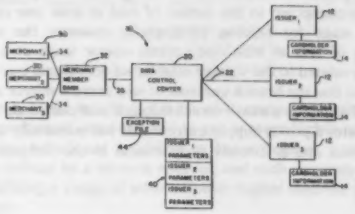
whereby to automatically read said work time data line recorded on said work slip and to display the total periods of time which are obtained by summing up separately according to the kinds of work and the items so as to print out the result of summing up in a predetermined column of said work slip.

4,485,300

LOSS CONTROL SYSTEM

Roger Peirce, Los Altos, Calif., assignor to Visa U.S.A., Inc., San Francisco, Calif.

Filed Mar. 18, 1982, Ser. No. 359,375
Int. Cl.³ G06K *5/00*
U.S. Cl. 235—380 **11 Claims**



1. A system wherein an issuer of bank cards can regulate the number and nature of authorization requests transmitted thereto from a merchant, said system comprising:

file means, maintained at the location of the issuer and containing information for evaluating a cardholder transaction;

data control center linked to the file means and having a storage means provided with authorization parameters supplied by the issuer, said authorization parameters defining which authorization requests are to be forwarded to the file means of the issuer; and

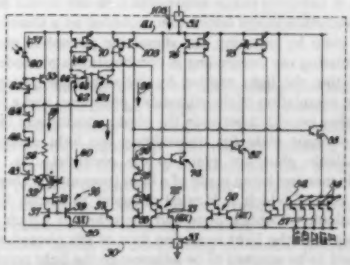
terminal means located at the merchant and linked to the data control center whereby when a request is transmitted by a merchant from the terminal means to authorize a transaction by a cardholder to the data control center, the data control center will only forward the request to the file means at the issuer if the request falls within the authorization parameters maintained in the storage means and supplied by the issuer.

4,485,301

LINEAR TWO-TERMINAL INTEGRATED CIRCUIT PHOTO SENSOR

Walter S. Gontowski, Jr., Thompson, Conn., and Edward Chalfin, Shrewsbury, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Feb. 1, 1982, Ser. No. 344,448
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—214 A **10 Claims**



1. A linear two-terminal integrated circuit photo sensor comprising (a) a principal photo diode; (b) a current mirror amplifier including at least one current-mirror stage having a current gain of greater than one, said principal photo diode

being connected in reverse current polarity to the input of said amplifier; (c) two terminal pads; (d) a conductive bus means for delivering electric energy from said two terminal pads to said principal photo diode and to said amplifier; (e) a separate bias means, comprising one string of series connected diodes, for establishing one bias current, derived from said two terminal pads, in a forward current direction through said one diode string that is directly proportional to the ambient light intensity and for making the amplitudes ratio of said one bias current to the output current from said at least one stage substantially less than unity; and (f) a cascoding transistor means having an input base connected to said one diode string and an output emitter cascode-connected to the output of said at least one current mirror stage for holding substantially constant the output voltage of said at least one current-mirror stage at a level directly related to the voltage established across said one diode string so that the branch currents of said current mirror amplifier and said bias means current through said one diode string contributes a power supply current that has essentially no DC component and is directly proportional to the ambient light intensity.

4,485,302

RADIATION IMAGE READ OUT DEVICE

Kazuyoshi Tanaka; Hisatoyo Kato, and Seiji Matsumoto, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

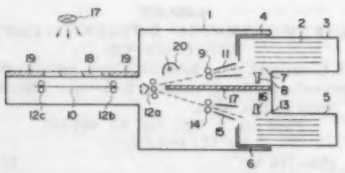
Division of Ser. No. 105,240, Dec. 19, 1979, Pat. No. 4,346,295. This application Nov. 30, 1981, Ser. No. 325,930

Claims priority, application Japan, Dec. 26, 1978, 53-163572; Jul. 11, 1979, 54-87806; Jul. 11, 1979, 54-87807; Jul. 11, 1979, 54-87808

The portion of the term of this patent subsequent to Aug. 24, 1999, has been disclaimed.

Int. Cl.³ G03C *5/16;* **G02B** *5/14*

U.S. Cl. 250—327.2 **11 Claims**



1. A radiation image informtion read out device for reading out radiation image informtion recorded on a stimulable phospor plate by scanning the stimulable phosphor plate wtih a stimulating ray comprising in combination a photodetector for detecting the light emitted by the stimulable phosphor plate upon stimulation of the stimulable phosphor, and a light guide member provided between the photodetector and the stimulable phospor plate for transmitting the light emitted by the stimulable phosphor plate to the photodetector, said light guide member being made of a light transmitting sheet material one end of which is located adjacent to a scan line on the stimulable phosphor plate and the other of which is located adjacent to the light receiving face of the photodetector and shaped to be adapted to be adjacent to the light receiving face wherein said end to be located adjacent to the scan line is shaped into a linear form and the other to be located adjacent to the light receiving face of the photodetector is shaped into an annular form to be adapted for the light receiving face of the photodetector.

4,485,303

FOCUS DETECTION WITH SPLITTER LENS

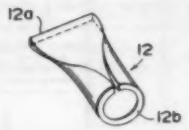
Takeomi Suzuki, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1982, Ser. No. 403,473

Claims priority, application Japan, Jul. 31, 1981, 56-119326

Int. Cl.³ G01J *1/20*

U.S. Cl. 250—201 **2 Claims**



1. A light beam splitter, comprising:

a focusing lens;

a pair of light receiving element arrays, each of said arrays having individual light receiving elements, the individual light receiving element of one said array corresponding to the individual light receiving elements of the other said array;

a splitter lens disposed with respect to said focusing lens such that a light beam, having passed through substantially one half of the light emission area of said focusing lens, defined by a substantial border line constituted by a straight line passing through substantially the center of the light emission area of said focusing lens and dividing such area into two regions, is incident on the light receiving elements of one of said arrays and a light beam having passed through the other region of said light emission area is incident on corresponding light receiving elements in the other of said arrays.

4,485,304

RADIATION IMAGE RECORDING SYSTEM

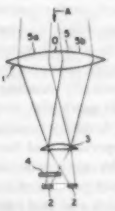
Masanori Teraoka; Takao Komaki, and Seiji Matsumoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 15, 1982, Ser. No. 339,797

Claims priority, application Japan, Jan. 16, 1981, 56-4890

Int. Cl.³ G01T *1/11*

U.S. Cl. 250—327.2 **12 Claims**



1. A radiation image recording system comprising a sheet feed body fitting section which releasably holds a sheet feed body containing stimulable phosphor sheets or a continuous stimulable phosphor sheet used for the radiation image recording and reproduction or a sheet feeding section containing said stimulable phosphor sheets or a continuous stimulable phosphor sheet, a stimulable phosphor sheet holding means for supplying each said stimulable phosphor sheet or predetermined lengths of said continuous stimulable phosphor sheet from said fitted sheet feed body or said sheet feeding section to a recording position, a sheet delivery means for ejecting said

stimulable phosphor sheet from said recording position after a radiation image is recorded on said stimulable phosphor sheet and for delivering it to a sheet receiving section or a radiation image information read out and reproducing system, and an irradiation means which is used to erase the noise in said stimulable phosphor sheet and which is provided between said sheet feed body fitting section or said sheet feeding section and said stimulable phosphor sheet holding means such that said stimulable phosphor sheet is exposed to said irradiation means immediately before it is delivered to said recording position.

4,485,305

INFRARED DETECTOR WITH VIBRATING CHOPPER

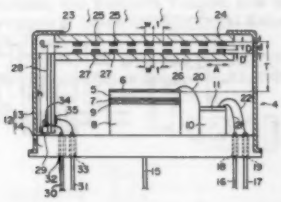
Yukinori Kuwano; Shoichi Nakano; Toshiaki Yokoo, and Kenichi Shibata, all of Osaka, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Aug. 12, 1982, Ser. No. 407,582

Claims priority, application Japan, Aug. 20, 1981, 56-130959; Oct. 6, 1981, 56-159642; Oct. 27, 1981, 56-172214; Jan. 27, 1982, 57-12432; Jan. 29, 1982, 57-13892

Int. Cl.³ G01J *5/08*

U.S. Cl. 250—338 **37 Claims**



1. An infrared ray detector comprising:

an infrared ray detecting body,

a pair of opposing portions having a plurality of infrared ray non-transmitting portions and infrared ray transmitting portions,

intermitting means for intermitting infrared rays incident upon said infrared ray detecting body through said pair of opposing portions, said intermitting means comprising a vibrator connected to one of said pair of opposing portions, wherein a state that the infrared ray transmitting portions of both opposing portions are substantially overlapped with respect to each other and the infrared ray non-transmitting portions of both opposing portions are substantially overlapped with respect to each other, and a state that the infrared ray non-transmitting portions and transmitting portions of one opposing portion are substantially overlapped with the infrared ray transmitting portions and non-transmitting portions of the other opposing portion, respectively, are alternately repeated, and

a housing containing said infrared ray detecting body, said pair of opposing portions and said intermitting means, said housing being provided with an opening for incidence of infrared rays.

4,485,306

MEASUREMENT OF SOLAR RADIATION

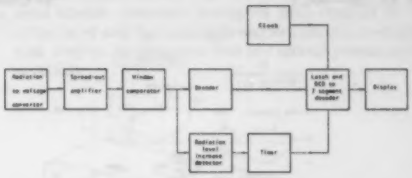
Arie Braunstein, 37 Shlonsky St., Tel Aviv; Ezra Sohar, 20 Sheshet Hayamim St., Jerusalem, and Theodore Levite, 5 Levite St., Ramat Gan 52105, all of Israel

Filed Feb. 19, 1982, Ser. No. 350,163

Int. Cl.³ G01J *5/18*

U.S. Cl. 250—372 **6 Claims**

1. A device for determining the intensity of solar radiation in the region of the spectrum likely to cause skin damage upon overexposure, essentially in the region of 200 to 450 nm, comprising a photosensor, a filter selectively passing the part of the spectrum in the UV region likely to cause such damage, a spread-out amplifier in combination with a window comparator, the output of said spread-out amplifier being not directly proportional to the intensity of the radiation striking said photosensor, but being spread-out by said spread-out amplifier and subdivided into a number of discrete levels by said window comparator so that the lowest level of intensity of radiation



defines a range in which danger of overexposure exists only upon prolonged exposure, and to one or more higher ranges of intensity, which are amplified to lesser degrees, each level being defined by a discrete readout, and each successive readout defining a range of solar intensity higher than the preceding one.

4,485,307

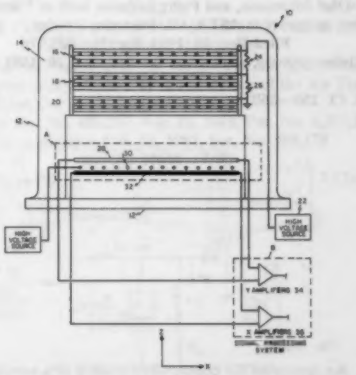
MEDICAL GAMMA RAY IMAGING

Louis S. Osborne, Lexington, and Richard C. Lanza, Brookline, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 27, 1982, Ser. No. 343,077

Int. Cl.³ G01T *1/18*

U.S. Cl. 250—385 **15 Claims**



1. A radiation imaging device for determining the distribution of a radioisotope into an object, the device comprising:

(a) a wire mesh conversion means for absorbing radiation emitted by the radioisotope and thereby releasing electrons, said means forming a substantially solid structure with a plurality of parallel holes therethrough;

(b) a ionizable media in said holes for propagating ionization events caused by the released electrons;

(c) a detector means for determining the spatial position of ionization events; and

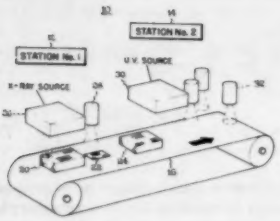
(d) an electric field means for generating an electric drift field substantially parallel to the holes of the conversion means, whereby ionization events can be transported to the detector means and a distribution image of object obtained.

4,485,308

PHOTO DETECTION SYSTEM

Jacob G. Rabatin, Chardon, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 26, 1982, Ser. No. 371,836
Int. Cl.³ G01N *21/64*
U.S. Cl. 250—461.1 **10 Claims**



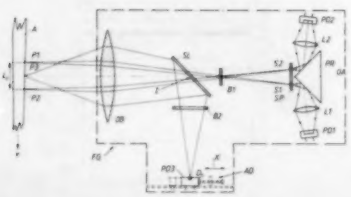
1. An improved photo detection system which includes a low energy x-ray source positioned to irradiate objects marked with a plurality of phosphors having diffferent emission color characteristics including an x-ray excitable phosphor selected from the class of inorganic rare earth containing compounds activated with a rare earth ion and exhibiting minimum afterglow, a plurality of optical photo detection means positioned adjacent said x-ray source and each being selectively responsive to the emission color produced by a single phosphor, and one or more objects which have been marked on the surface with a medium containing said phosphors.

4,485,309

APPARATUS FOR CONTACT-FREE SENSING OF A MOVING COHERENT MASS OF MATERIAL

Per-Olof Johansson, and Folke Löfgren, both of Västerås, Sweden, assignors to ASEA AB, Västerås, Sweden

Filed Dec. 30, 1981, Ser. No. 335,976
Claims priority, application Sweden, Jan. 20, 1981, 8100283
Int. Cl.³ G01N *21/86*
U.S. Cl. 250—560 **13 Claims**



1. An apparatus for contact-free sensing of a moving coherent mass of material including:

optical means comprising an objective lens for focussing heat and/or light radiation collected from the moving coherent mass of material and beam dividing means for dividing the heat and/or light radiation focussed by the objective lens into a first beam and a second beam,

first sensing means arranged in the path of said first beam for producing first output signals for determining the speed of advance of the coherent mass of material past the sensing apparatus,

second sensing means arranged in the path of said second beam for producing a second output signal related to a dimension of the moving coherent mass of material transverse to its direction of advance,

first diaphragm means positioned between said beam dividing means and said first sensing means to prevent passage of at least part of that portion of said first beam which emanates from radiation emitted and/or reflected from the material being sensed towards said objective lens in directions which are not at least approximately parallel to the optical axis of said objective lens, and,

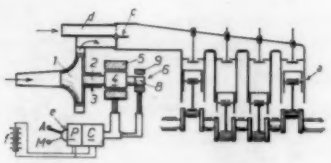
second diaphragm means positioned between said beam dividing means and said second sensing means to prevent passage of at least part of that portion of said second beam which emanates from radiation emitted and/or reflected from the material being sensed towards said objective lens in directions which are not at least approximately parallel to the optical axis of said objective lens.

4,485,310

COMBINATION OF A COMPRESSION OR EXPANSION TURBINE ENGINE AND AN ELECTRIC MOTOR

Pierre de Valroger, Paris, France, assignor to Valbrev (Société à Responsabilité Limitée), Paris, France

Filed Apr. 28, 1982, Ser. No. 372,546
Claims priority, application France, Apr. 30, 1981, 81 08683
Int. Cl.³ H02K *7/08, 7/18*
U.S. Cl. 290—52 **7 Claims**



1. Motor-and-generator assembly, comprising:

a rotary fluid compression and/or expansion machine having a stationary casing and a bladed turbo-section encased therein and integral with a rotating shaft journalled in a bearing for accurate centering of said turbo-section with minimal clearance between the rotary blades thereof and the adjacent portion of said stationary casing, and

a battery-feedable direct-current brushless electric motor unit having a rotor integral with said rotating shaft and carrying permanent magnets, a stator carrying electric windings and surrounding said rotor with a high tolerance air-gap and centering therebetween compared with the clearance and centering between said machine casing and turbo-section, a transistorized electronic circuit for electric commutation of said stator windings, and rotor speed sensing means for the control of said electronic circuit, whereby said electric motor has a self-synchronous operation.

4,485,311

DRIVE CIRCUIT FOR AT LEAST ONE LIGHT-EMITTING DIODE

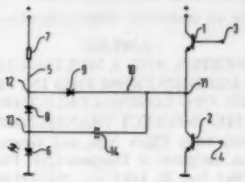
Jan Goerne, and Wilfried Traulsen, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 4, 1982, Ser. No. 385,032
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1981, 3128013
Int. Cl.³ H03K *3/42, 3/26*
U.S. Cl. 307—270 **2 Claims**

1. In a drive circuit for driving at least one light-emitting diode, said light-emitting diode being connected in series with an additional diode which is connected to a source of operating potential through a resistor, said light-emitting diode also connected to a transistor push-pull circuit containing two transistors connected at a junction, the improvement comprising:

a connecting diode interconnected between the junction of said resistor and said additional diode and the junction of

said two transistors in said transistor push-pull circuit for forming a path to ground with one of said transistors in said push-pull circuit in parallel with said light-emitting diode and said additional diode such that no current is supplied to said light-emitting diode;



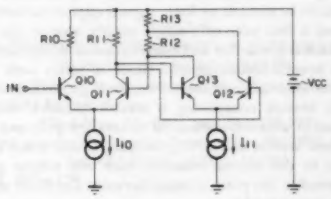
said additional diode supplying current to said light-emitting diode when said one of said transistors in said push-pull circuit is non-conducting.

4,485,312

HYSTERESIS CIRCUIT

Hiromi Kusakabe, and Yoshihiro Yoshida, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaka, Japan

Filed Jun. 11, 1982, Ser. No. 387,751
Claims priority, application Japan, Jun. 15, 1981, 56-91987
Int. Cl.³ H03K *3/29, 5/153*
U.S. Cl. 307—290 **4 Claims**



1. A hysteresis circuit comprising:
- a first differential pair of first and second transistors each having a collector, an emitter and a base with means for providing operative biasing thereof;
- a second differential pair of third and fourth transistors each having a collector, an emitter and a base with means for providing operative biasing thereof;
- a bias circuit connected between the base of said second transistor and a power supply terminal; and
- means for connecting the collectors of said first and second transistors to the bases of said third and fourth transistors, respectively, and connecting the collectors of said third and fourth transistors to different potential points of said bias circuit, respectively, so that said first and second differential pairs are connected in a positive feedback relation with respect to the base of said first transistor when and input is applied thereto.

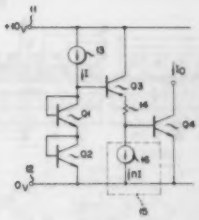
4,485,313

LOW-VALUE CURRENT SOURCE CIRCUIT

Katsumi Nagano, Hiratsuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 23, 1982, Ser. No. 361,092
Claims priority, application Japan, Mar. 27, 1981, 56-45050
Int. Cl.³ H03K *17/00*; **H03F** *3/04*
U.S. Cl. 307—296 R **4 Claims**

1. A current source circuit comprising:
- first and second power supply terminals between which a power source voltage is applied;
- a series circuit of first and second bipolar transistors each having its base shunted to its collector, said series circuit being coupled between said first and second power supply terminals;
- an input current source coupled between said first power supply terminal and the collector of said first transistor for supplying an input current to said series connection of said first and second transistors;
- a third bipolar transistor having its base coupled to the collector of said first transistor and its collector-to-emitter path coupled between said first and second power supply terminals;



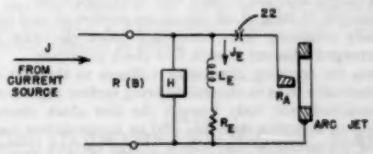
- a resistor coupled between the emitter of said third transistor and said second power supply terminal;
- a current supply circuit connected in said second collector-to-emitter path for supplying said third transistor with a current the magnitude of which is n times that of the input current; and
- a fourth bipolar transistor having its base coupled to the emitter of said third transistor through said resistor, its emitter coupled to said second power supply terminal, and providing an output current to its collector.

4,485,314

POWER CIRCUIT UTILIZING SELF-EXCITED HALL EFFECT SWITCH MEANS

Peter J. Turchi, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 189,237, Sep. 22, 1980, Pat. No. 4,397,147.
This application Feb. 23, 1983, Ser. No. 469,176
Int. Cl.³ H03K *17/90*
U.S. Cl. 307—308 **3 Claims**



1. In combination with a spark gap device a self excited Hall effect switch comprising
- Hall effect active element means having terminals for connection into an electrical circuit to effect the passage of electrical current through said Hall effect active element means, and
- magnetic field means including an exciter coil for providing a magnetic field perpendicular to the electrical current flow in said Hall effect active element means, said exciter coil being connected across said spark gap device and in parallel with said Hall effect active element means, said exciter coil controlling the magnitude of said perpendicular magnetic field in response to electrical current flowing through said exciter coil.

4,485,315

BLOOMING SUPPRESSION IN A CCD IMAGING DEVICE

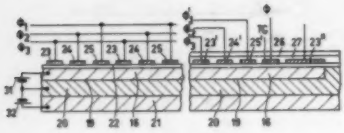
Marnix G. Collet, Sunnyvale, Calif., and Johannes G. van Santen, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

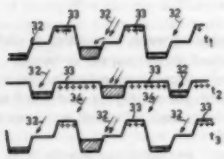
Continuation of Ser. No. 231,649, Feb. 5, 1981, abandoned. This application Feb. 9, 1984, Ser. No. 578,301

Claims priority, application Netherlands, Feb. 19, 1980, 8000998

Int. Cl.[3] **H01L** *29/78, 27/14, 31/00;* **G11C** *19/28*

U.S. Cl. 307—311 **10 Claims**





1. A solid state pickup camera comprising a photosensitive target comprising:

a semiconductor body having a surface;

an electrically insulating layer partially covering the surface of the semiconductor body;

a plurality of first clock electrodes present on said electrically insulating layer, said first clock electrodes defining, in portions of the semiconductor body beneath the first clock electrodes, a plurality of charge storage capacities in which, during operation, charge carriers of a first type which are generated locally in the semiconductor body by absorption of incident radiation can be stored and integrated for an integration period;

a plurality of second clock electrodes present on said electrically insulating layer, one second clock electrode being arranged adjacent to each first clock electrode;

a plurality of third clock electrodes present on said electrically insulating layer, one third clock electrode being arranged adjacent to each first clock electrode;

means for applying alternating voltages to the first clock electrodes so as to alternately bring surface regions of the semiconductor body beneath the first clock electrodes into an inversion state and into an accumulation state, in the accumulation state excess charge carriers of the first type being collected in traps in the surface regions, in the inversion state trapped excess charge carriers of the first type being recombined with charge carriers of a second type opposite to the first type;

means for applying voltages to the second clock electrodes so as to bring surface regions of the semiconductor body beneath the second clock electrodes into an inversion state in which charge carriers of the second type are stored below the second clock electrodes when the surface regions beneath the first clock electrodes are in the accumulation state, said charge carriers of the second type being transferred to the surface regions beneath the first clock electrodes when the surface regions beneath the first clock electrodes are in the inversion state; and

means for applying voltages to the third clock electrodes so that charge carriers of the first type are transferred to and stored in surface regions of the semiconductor body beneath the third clock electrodes when the surface regions beneath the first clock electrodes are in an inversion state, and so that charge carriers of the first type are transferred back to the surface regions beneath the first clock electrodes when the surface regions beneath the first clock electrodes are in an accumulation state.

4,485,316

LOGIC INVERTER, AND A MULTI-OUTPUT LOGIC OPERATOR DERIVED FROM THIS INVERTER, USING AT LEAST TWO LOW-VOLTAGE-THRESHOLD FIELD-EFFECT TRANSISTORS

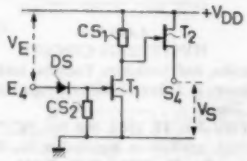
Gérard Nuzillat; Tung Pham Ngu, and Georges Bert, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 22, 1981, Ser. No. 275,623

Claims priority, application France, Jun. 24, 1980, 80 13964

Int. Cl.[3] **H03K** *19/017, 19/094, 19/20, 19/21*

U.S. Cl. 307—446 **8 Claims**



1. A logic inverter, of the type using two field-effect transistors of the quasi-normally-off type, comprising an input terminal intended to be excited by logic signals applied between this terminal and a first pole of a single supply source, the other pole of which is grounded and which further comprises:

an input branch consisting of a diode in series with a first resistive load one terminal of which is grounded;

a middle branch comprising a second resistive load one terminal of which is connected to said first pole and a first transistor whose source is grounded, whose drain is connected to the second resistive load and whose gate is connected to the point situated between the diode and the first resistive load;

an output branch comprising a second transistor whose drain is connected to said first pole, whose source is connected to the output terminal of the inverter and whose gate is connected to the point situated between the drain of the first transistor and the second resistive load, the logic signals being recovered between the output terminal and ground.

4,485,317

DYNAMIC TTL INPUT COMPARATOR FOR CMOS DEVICES

Thomas J. Davies, Jr., Gilroy, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Oct. 2, 1981, Ser. No. 308,073

Int. Cl.[3] **H03K** *19/094, 5/24, 3/356;* **G01R** *19/165*

U.S. Cl. 307—475 **6 Claims**

1. CMOS circuitry for the dynamic translation of input signals at TTL levels into corresponding output signals at CMOS levels, said circuitry comprising:

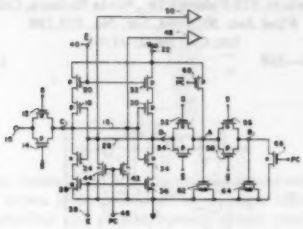
reference generating means for generating a reference potential at a first point in the circuitry, said potential being at a level between the highest TTL voltage representing a binary "0" and the lowest TTL voltage representing a binary "1";

input signal means including a TTL level signal input terminal for introducing an input signal at a TTL level to a second point in said circuitry; and

a bistable CMOS latch having a reference input coupled to said reference potential at said first point and a second input coupled to said TTL level signal input at said second

point and outputs for said CMOS levels, for latching at one CMOS logic level or the other CMOS logic level depending upon the sign of the voltage difference between said first and said second points, and where said reference potential is established by the ratio of the areas of two capacitors;

means for precharging said capacitors to predetermined



voltage levels by coupling them to predetermined bias voltages;

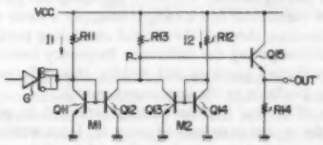
means for coupling said capacitors together in parallel after said precharge operation such that the final voltage across the pair depends upon the ratios of their areas and their precharge voltages and for coupling said capacitors to said reference input such that the voltage across the pair of capacitors becomes said reference potential.

4,485,318

INTERFACE CIRCUIT FOR AN INTEGRATED INJECTION LOGIC CIRCUIT

Jun Sano, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 10, 1982, Ser. No. 356,757
Claims priority, application Japan, Mar. 18, 1981, 56-39237
Int. Cl.³ H03K *19/092, 19/091*
U.S. Cl. 307—475 **8 Claims**



5. An interface circuit for an integrated injection logic circuit, comprising:

first and second power source terminals;

first, second and third resistors each having a first end connected to said first power source terminal;

a first current mirror circuit connected to said integrated injection logic circuit and having an input current path and an output current path, said input and output current mirror paths being respectively connected between said second power source terminal and the respective second ends of said first and third resistors, whereby the input current value of said first current mirror circuit is set by said first resistor and the input of said first current mirror circuit is controlled by the output signal of said integrated injection logic circuit;

a second current mirror circuit having an input current path and an output current path, said input and output current mirror paths being respectively connected between said second power source terminal and the respective second ends of said second and third resistors, and whereby the input current value of said second current mirror circuit is set by said second resistor; and

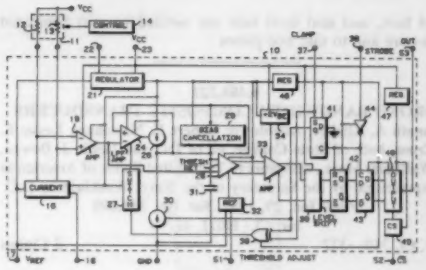
output means connected to said second end of said third resistor.

4,485,319

BUBBLE MEMORY SENSE AMPLIFIER

Robert B. Davies, Tempe; Robert N. Dotson, Mesa, and Ira Miller, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 26, 1982, Ser. No. 352,989
Int. Cl.³ H03K *5/159, 17/00;* **G11C** *19/08*
U.S. Cl. 307—530 **12 Claims**



1. In combination with a magnetic bubble memory system having a magnetic bubble memory device, a dummy detector, a detector which changes resistance in response to movement of a magnetic bubble adjacent thereto, control means for effecting movement of magnetic bubbles adjacent to the detector, and a sense amplifier, the sense amplifier comprising: a constant current source for providing a current flow through the dummy detector and through the detector at a level determined by a reference voltage; an amplifier coupled to the detector for amplifying a signal sensed by the detector; a clamp switch coupled to the amplifier to prevent the amplifier from responding to the signal during a predetermined time; means for storing an output from the amplifier, the means for storing being coupled to the amplifier; a comparator coupled to the means for storing for comparing the output stored therein to a predetermined reference, the comparator providing an output when the stored output exceeds the predetermined reference; and a flip-flop coupled to the output of the comparator, the flip-flop providing a predetermined output level when the comparator provides an output.

4,485,320

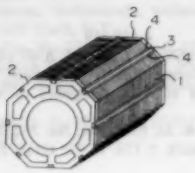
WELDED STATOR USING NON-MAGNETIC BARS IN SPECIALLY SHAPED LAMINATION SLOTS

Shigeki Kawada, Hino; Shigeaki Oyama, Hachioji; Kousei Nakamura, and Jiro Nakano, both of Hino, all of Japan, assignors to Fanuc Ltd., Hino, Japan

PCT No. PCT/JP82/00360, § 371 Date May 6, 1983, § 102(e) Date May 6, 1983, PCT Pub. No. WO83/00953, PCT Pub. Date Mar. 17, 1983
PCT Filed Sep. 8, 1982, Ser. No. 498,187
Claims priority, application Japan, Sep. 8, 1981, 56-140242
Int. Cl.³ H02K *1/16, 1/18*
U.S. Cl. 310—217 **2 Claims**

1. A stator comprising a laminated iron-core with windings, end plates, and a frame formed on the outer periphery of the laminated iron-core, characterized in that said frame comprises steel bars made of a non-magnetic steel and having a trapezoidal shape in cross-section; dovetail grooves which accomodate the steel bars, are formed in said laminated iron-core and edges

of said laminated iron-core at said dovetail grooves are beveled to form V-grooves between said laminated iron-core and said



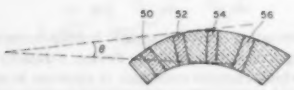
steel bars, and said steel bars are welded to said laminated iron-core and to said end plates.

4,485,321

BROAD BANDWIDTH COMPOSITE TRANSDUCERS

Kenneth A. Klicker, Allentown; Robert E. Newnham; Leslie E. Cross, both of State College, all of Pa., and Leslie J. Bowen, Waltham, Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 29, 1982, Ser. No. 344,098
Int. Cl.³ H01L *41/04*
U.S. Cl. 310—322 **5 Claims**



1. A broad bandwidth composite transducer which comprises:

a plurality of piezoelectric sheets each of which being of different thickness; and an inactive polymer having said plurality of piezoelectric sheets embedded therein so as to mechanically decouple each member of said plurality of piezoelectric sheets from the remaining sheets thereof; and

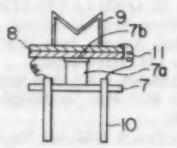
said plurality of piezoelectric sheets and said inactive polymer form a monolithic composite material for said composite transducer.

4,485,322

ULTRASONIC TRANSDUCER

Eturo Yasuda; Shigeyuki Akita, and Masao Kodera, all of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 22, 1982, Ser. No. 360,767
Claims priority, application Japan, Apr. 7, 1981, 56-52131
Int. Cl.³ H04R *17/00, 1/00*
U.S. Cl. 310—332 **7 Claims**



1. An ultrasonic transducer comprising:

i. a terminal board carrying terminals and provided with a projecting portion having a free end;

ii. a bimorph cell having an upper surface and a lower surface attached, at the center thereof, to the free end of said projecting portion through an elastic binding agent;

iii. a cylindrical resonator connected to said upper surface of said bimorph cell, having a recessed top wall and defining a fluid-tight space therein together with said upper surface of said bimorph cell; and

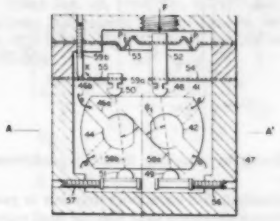
iv. lead wire electrically connecting said upper and lower surfaces of said bimorph cell to said terminals.

4,485,323

MONOLITHIC OSCILLATING CRYSTAL TRANSDUCER SYSTEMS

James P. Corbett, 923 Palermo Dr., Santa Barbara, Calif. 93105

Filed Jan. 30, 1984, Ser. No. 575,190
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—338 **12 Claims**



1. A force transducer comprising;

a plate-shaped piezo electric crystal having a peripheral edge,

a first pair of electrodes disposed on corresponding regions on opposite sides of a first portion of the crystal,

a second pair of electrodes disposed on corresponding regions on opposite sides of a second portion of the crystal,

means for energising the electrode pairs to maintain oscillation of the first and second crystal portions at different frequencies,

a first pair of seating members engaging the peripheral edge of the crystal and arranged to apply a force along a line extending through the first oscillating portion,

a second pair of seating members engaging the peripheral edge of the crystal and arranged to apply a force along a line extending through the second oscillating portion,

means for computing the difference frequency between the two oscillating portions and making this difference frequency available as the instrument output,

the pairs of seating members being arranged in positions along the crystal periphery to cause the force sensitivity of the instrument output to be independent of temperature changes of the instrument and further to cause the instrument output itself to be independent of temperature changes.

4,485,324

PIEZOELECTRIC HIGH VOLTAGE IMPACT MECHANISM

Don A. Berlincourt, Russell Township, Cuyahoga County; Kendall A. Pim, Cleveland Heights, and Joseph L. Randles, Willoughby Hills, all of Ohio, assignors to Channel Products, Inc., Chesterland, Ohio

Filed Aug. 11, 1983, Ser. No. 522,016
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—339 **8 Claims**

1. An impact type piezoelectric high voltage mechanism comprising:

housing means;

ledge means contained within said housing means;

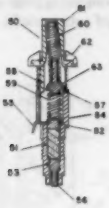
actuator means movable in said housing means; said actuator means having a blind bore formed therein;

hammer means receivable in said housing means;

actuating spring means received within said blind bore and operably connected to said hammer means; and

piezoelectric element means received in said housing, said piezoelectric element means responsive to mechanical actuation thereof to produce a spark;

said blind bore in said actuator means having a longitudinal axis offset from the longitudinal axis of said actuator



means causing said actuating spring means and said hammer means to be positioned at an angle offset from the longitudinal axis of said housing means resulting in the engagement of said hammer means with said ledge means upon the inward movement of said actuator means in said housing means.

4,485,325

HOUSING AND MOUNTING FOR A CHIP-LIKE PIEZOELECTRIC VIBRATOR COMPONENT

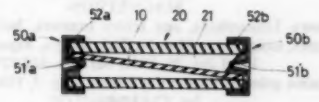
Takashi Yamamoto, Oshimizu, and Houdo Kitajima, Takaoka, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Feb. 22, 1983, Ser. No. 468,478

Claims priority, application Japan, Mar. 4, 1982, 57-31693[U]; Nov. 11, 1982, 57-198493

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—344 **5 Claims**



1. A chip-like piezoelectric vibrator component, comprising:

a piezoelectric vibrator element including an elongated piezoelectric plate having first and second opposing electrodes formed on opposite main surfaces of said piezoelectric plate, said first and second opposing electrodes at least partially overlapping one another, said piezoelectric vibrator element exhibiting a vibration with energy trapped in the longitudinal direction thereof;

first and second withdrawing electrodes for respectively connecting said first and second opposing electrodes to opposite ends of said piezoelectric plate;

an axially elongated case formed of an insulating material and having first and second openings formed at opposite ends thereof for housing said piezoelectric vibrator element in a hollow portion of said case;

first and second conductive terminal members mounted on said first and second openings, respectively, each of said conductive terminals having a recess formed therein which is defined, in part, by a convex portion of said conductive terminals which protrude inwardly of said case, said recesses defining positioning members which cooperate with each other to position said vibrator element such that a space is formed between a portion of said opposing electrodes and the inner wall of said case when said piezoelectric vibrator element is housed in said case; and

first and second connecting members electrically connecting said first and second conductive terminals to said first and second withdrawing electrodes, respectively.

4,485,326

ELECTRIC LAMP WITH A SLEEVE-SHAPED CAP

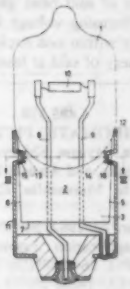
Paul Hellwig, and Werner Schlagheck, both of Aachen, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 189,488, Sep. 22, 1980, abandoned. This application Apr. 10, 1984, Ser. No. 598,398

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1979, 2941011

Int. Cl.³ H01J *5/48*

U.S. Cl. 313—318 **7 Claims**



1. An electric lamp having a glass bulb, a unitary sleeve shaped cap and integral means for preventing relative radial and axial movement of said cap with respect to said bulb, said means consisting of said sleeve shaped cap having inwardly-directed projections and said glass bulb having a flat pinch with two opposing major faces, two opposing minor faces, and an end face from which power leads protrude, said leads extending through said pinch to an electrical element inside said lamp bulb, said pinch being situtated inside said sleeve-shaped cap and fixed between said inwardly-directed projections in the cap, said minor faces of said pinch each have at least one recess dimensioned and configured for locking engagement with respective inwardly-directed projections.

4,485,327

COLOR PICTURE TUBE

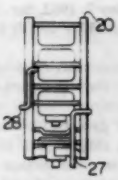
Masayoshi Misono, Chiba, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 85,254, Oct. 16, 1979, Pat. No. 4,350,924. This application May 18, 1982, Ser. No. 379,337

Claims priority, application Japan, Oct. 18, 1978, 53-127334; Oct. 20, 1978, 53-143471

Int. Cl.³ H01J *29/48, 29/46*

U.S. Cl. 313—414 **6 Claims**



1. A color picture tube with an in-line multi-stage focusing type electron gun assembly including:

an envelope having a neck tube;

a group of electrodes contained in the neck tube and including a successive arrangement of a cathode electrode, at least one grid electrode connected to receive a focusing voltage and at least one grid electrode connected to receive an anode voltage;

a plurality of bead glasses for supporting these electrodes at predetermined spacings; and

an inner graphite coating formed on the inner wall of the neck tube and connected to receive said anode voltage;

said electron gun assembly comprising a focusing voltage feed conductor for feeding the focusing voltage to at least one grid electrode which is to receive said focusing voltage, said feed conductor being shaped such that it runs through a gap between the inner wall of said neck tube and at least one of said bead glasses so that at least a portion of said focusing voltage feed conductor extends circumferentially within said neck tube and passes across the outer periphery of said at least one bead glass.

4,485,328

MONOCHROMATIC PICTURE TUBE

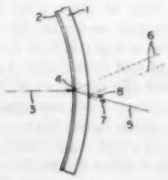
Chikayoshi Ninagawa, Hyogo; Shigeya Ashizaki; Masamichi Kimura, both of Osaka, and Atsushi Hosokawa, Kyoto, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Apr. 20, 1982, Ser. No. 370,050

Claims priority, application Japan, Apr. 28, 1981, 56-62378[U]; May 13, 1981, 56-68889[U]

Int. Cl.³ H01J *29/10, 29/20*

U.S. Cl. 313—466 **2 Claims**



1. A monochromatic cathode ray tube for a display, wherein a phosphor screen coprising phosphor grains coated with a black pigment and for emitting monochromatic light upon irradiation with an electron beam is provided inside a faceplate comprising a single glass plate, said faceplate having a transmittance of less than 32% and a reflectance of 7±1% at an outer surface thereof.

4,485,329

CRT INCORPORATING X-RAY ABSORBING MEANS

Robert L. Donofrio, Elbridge; Peter H. Rollason, Cayuga, and Mahlon B. Fisher, Skaneateles, all of N.Y., assignors to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed May 7, 1982, Ser. No. 375,902

Int. Cl.³ H01J *29/86;* **H04N** *5/65*

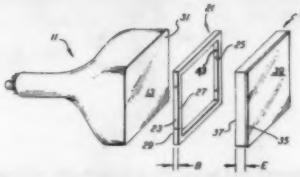
U.S. Cl. 313—478 **9 Claims**

1. A cathode ray tube having x-ray absorbing means integrally associated with the face region thereof, said means being a combination comprising:

an open frame-like gasket of uniform predetermined thickness such being shaped as a one-piece continuous-wall member having an outer surface substantially conforming to the perimetrical shape of said face region and an inner surface circumscribing the utilized facial area of said tube, said gasket having a wall width defined by the material intermediate said outer and inner surfaces, the material thickness of said gasket being defined by front and rear surfaces with the rear surface thereof being adhered to the exterior peripheral region of said tube face area;

a substantially transparent cover plate of x-ray absorbing glass having front and rear surfaces and being of a size greater than said utilized facial area of said tube, said cover plate being superposed upon and peripherally adhered to the front surface of said gasket; and

a confined layer of substantially transparent adhesive material completely filling the facial region encompassed by said gasket thereby effecting bonding of said cover plate to the face area of said tube,



characterized in that the gasket is formed of a substantially resilient closed cell polymer composition impregnated with x-ray absorbing material, and in that said gasket has a plurality of discrete piercings extending through said outer and inner surfaces to provide self-closing port means therein.

4,485,330

MAGNETRON

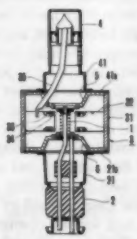
Mamoru Tsuzurahara, and Ichiro Inamura, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 28, 1982, Ser. No. 402,737

Claims priority, application Japan, Aug. 3, 1981, 56-120756

Int. Cl.³ H01J *25/50*

U.S. Cl. 315—39.51 **3 Claims**



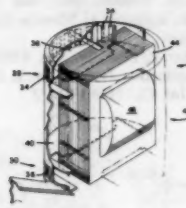
1. A magnetron comprising an anode cylinder, an even number of vanes radially extending from the inner wall of said anode cylinder and forming together with the anode cylinder a resonant circuit, and sealing members hermetically sealed to the opposite ends of said anode cylinder via seal flanges and respectively connected to a microwave power output section and to a cathode support stem, characterized by said anode cylinder and vanes being made of aluminum, said sealing members being made from iron plates, said seal flanges being aluminum-clad iron plates, said sealing members being welded to said seal flanges, said seal flanges being soldered by aluminum solder to the opposite ends of said anode cylinder.

4,485,331

FLUORESCENT LAMP HOLDER

Thomas Haraden, Ipswich, and Harold L. Hough, Beverly, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 11, 1981, Ser. No. 329,907
Int. Cl.³ H01J 7/44
U.S. Cl. 315—57 2 Claims



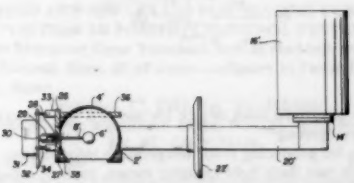
1. A lamp holder and ballast containing assembly comprising: a housing having a central, hollow body disposed about a longitudinal axis, said body having an upper portion, an intermediate portion and a lower portion; a plurality of cooling louvers peripherally arrayed about said upper portion and said intermediate portion; and integral first and second baffle plates formed on the interior wall of said housing extending toward said longitudinal axis, said first baffle plates being associated with said louvers of said upper portion and said second baffle plates being associated with said louvers of said intermediate portion.

4,485,332

METHOD & APPARATUS FOR COOLING ELECTRODELESS LAMPS

Michael G. Ury, Bethesda, and Charles H. Wood, Rockville, both of Md., assignors to Fusion Systems Corporation, Rockville, Md.

Filed May 24, 1982, Ser. No. 381,481
Int. Cl.³ H01J 7/24
U.S. Cl. 315—112 19 Claims



1. A method of cooling an electrodeless lamp having a lamp envelope which gets extremely hot during operation, comprising the steps of,

providing at least a stream of cooling gas under pressure,

directing said at least a stream of cooling gas at said lamp envelope, and

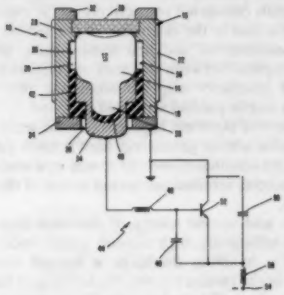
rotating said lamp envelope about an axis passing through said envelope so that surface portions of said envelope about said axis are cooled by said at least a stream of gas.

4,485,333

VAPOR DISCHARGE LAMP ASSEMBLY

Seymour Goldberg, Boston, Mass., assignor to EG&G, Inc., Wellesley, Mass.

Filed Apr. 28, 1982, Ser. No. 372,837
Int. Cl.³ H05B 37/02
U.S. Cl. 315—149 4 Claims



1. A vapor discharge lamp assembly for use as a high resolution optical spectral line source of light, comprising:

(a) a lamp including:

(i) a sealed envelope having a longitudinal axis along which light may exit that envelope, and

(ii) a vaporizable alkali metal inside said sealed envelope;

(b) discrete capacitive means, having two discrete electrodes located adjacent the outer surface of said envelope and having at least portions of said electrodes displaced longitudinally relative to each other, for providing within said sealed envelope an electric field which is substantially parallel to said longitudinal axis of said sealed envelope to ionize the vapors of said alkali metal and thereby cause said vapors to radiate optical spectral line light from said envelope along said longitudinal axis; and

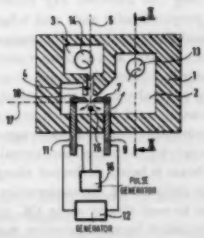
(c) an oven chamber for maintaining a predetermined operating temperature within said sealed envelope, said oven chamber comprising a first metal cylinder surrounding the outside of said envelope, the inner surface of said metal cylinder also serving as a first electrode for said capacitive means.

4,485,334

SPARK GAP APPARATUS COMPRISING A PLURALITY OF PAIRS OF ELECTRODES IN PARALLEL

Olivier de Witte, Gif sur Yvette, France, assignor to Compagnie Generale Electricite, Paris, France

Filed Jul. 9, 1982, Ser. No. 396,943
Claims priority, application France, Jul. 28, 1981, 81 14619
Int. Cl.³ H05B 37/00
U.S. Cl. 315—167 4 Claims



1. Spark gap apparatus comprising:

a first row of n electrodes connected in parallel, where n is an integer not less than two;

a second row of n electrodes connected in parallel and disposed opposite to respective ones of said n electrodes of the first row and forming a gap therebetween;

a gas disposed between the electrodes of the first and second rows;

a first source of electrical high tension having first and second terminals connected respectively to the electrodes of the first row and to the electrodes of the second row, the tension delivered by said first source being below the striking potential between the pairs of electrodes;

an insulated conductor disposed along the two rows of electrodes and in parallel with said gap; and

a second source of electrical high tension, said second source being a pulse source generating high tension pulses and having a first terminal connected to said insulated conductor and a second terminal connected to one of the rows of electrodes,

and wherein said second source of electrical high tension generates sufficiently high tension pulses such that, in operation, a luminous discharge is formed around the insulation of the conductor, thereby ionizing at least some of said gas within said gap between the electrodes and thus ensuring simultaneous striking of n electrical arcs between the respective pairs of electrodes in said first and second rows,

and said apparatus further comprises means for causing the gas to flow through said gap between said rows of electrodes.

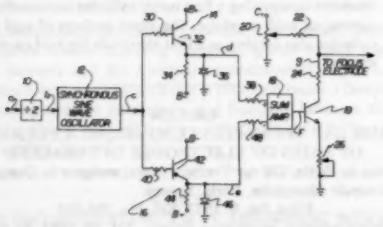
4,485,335
DYNAMIC FOCUSING CIRCUIT FOR A CATHODE RAY TUBE

Frederick M. Eames, Jr., Plano, Tex., assignor to Harris Data Communications Inc., Dallas, Tex.

Continuation of Ser. No. 173,725, Jul. 30, 1980, Pat. No. 4,318,033. This application Nov. 5, 1981, Ser. No. 318,525

Int. Cl.³ H01J *29/58*

U.S. Cl. 315—382 **10 Claims**



1. A dynamic focusing circuit for a cathode ray tube having means for deflecting the cathode ray beam along first and second mutually perpendicular axes and wherein said beam is deflected along said first axis at a first raster scan frequency and along said second axis at a second raster scan frequency which is substantially lower than said first frequency, and focusing means for normally receiving a steady state DC focusing signal for focusing said beam as it is scanned along said respective axes, noninductive and nonresonant focus correction means for supplying a correction signal to said focusing means while said beam is being deflected along said second axis to compensate for defocusing characteristics of said focusing means in response to said steady state DC signal, said noninductive and nonresonant focus correction means including:

means for providing a periodic signal having a frequency one-half said second scan frequency,

means responsive to said periodic signal for providing therefrom a said correction signal having a generally parabolic shape to compensate for said defocusing; and

means for directly applying said correction signal to said focusing means.

4,485,336
ELECTRONIC FLASH DEVICE

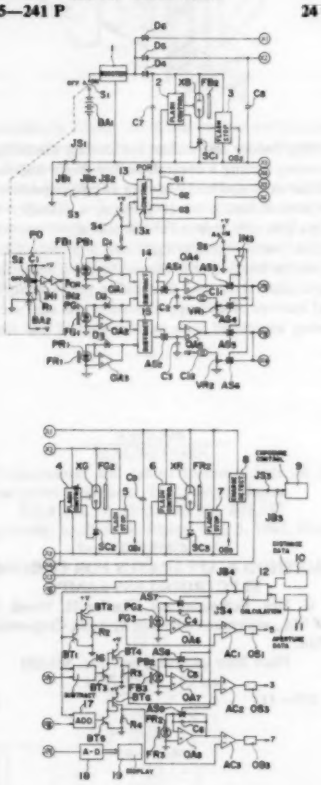
Ichiro Yoshiyama, Kobe; Yoshio Yuasa, Kawachinagano; Nobuyuki Taniguchi, Tondabayashi, and Norio Ishikawa, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 1, 1983, Ser. No. 470,954

Claims priority, application Japan, Mar. 2, 1982, 57-33246

Int. Cl.³ H05B *41/32*

U.S. Cl. 315—241 P **24 Claims**



1. An electronic flash device for use in a still camera, said device comprising:

means for producing color temperature information;

at least two flash light emitting means, each of which can emit flash light having different spectral characteristics;

calculation circuit means for calculating a ratio of the amounts of light to be emitted by the respective flash light emitting means on the basis of the information fed from the means for producing the color temperature information; and

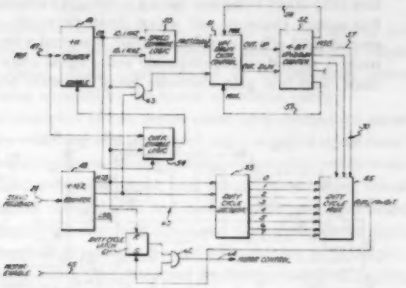
control circuit means for controlling the emission of light of the respective flash light emitting means in such a manner that the ratio of the light amount emitted from the respective flash light emitting means corresponds to the ratio calculated by the calculation circuit means.

4,485,337

SERVO DATA DRIVEN MOTOR SPEED CONTROL

Randall L. Sandusky, Tuttle, Okla., assignor to Control Data Corporation, Bloomington, Minn.

Filed May 9, 1983, Ser. No. 492,847
Int. Cl.[3] G05B 5/00
U.S. Cl. 318—314 8 Claims



1. A motor speed control comprising:
a motor;
means for generating feedback signals responsive to the speed of rotation of said motor;
a reference speed indicating means;
an up/down counter means;
feedback signal counter means for counting said feedback signals and for resetting to a count of zero on reaching a first predetermined count;
means responsive to said feedback signal counter means and to said reference speed indicating means for incrementing or decrementing said up/down counter depending on whether the speed of rotation of said motor is too fast or two slow;
decode means responsive to said feedback signal counter means for outputting a predetermined number of decode signals, each signal indicative of the count in said feedback signal counter means reaching a predetermined one of a corresponding number of counts;
multiplexer means responsive to the count of said up/down counter for selecting one of said predetermined decode signals; and
duty cycle latch means responsive to the logical rise of the selected signal for enabling power application to said motor and further responsive to a predetermined count of said feedback signal counter means for disabling power application to said motor.

4,485,338

METHOD AND APPARATUS FOR SENSING CURRENT POSITION IN POSITION CONTROL SYSTEM

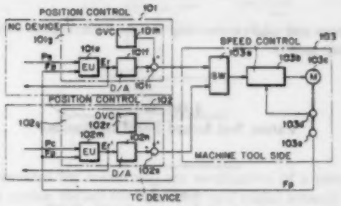
Hitoshi Matsuura; Etsuo Yamazaki, both of Hachioji, and Hiroshi Sakurai, Hino, all of Japan, assignors to Fanuc Ltd, Tokyo, Japan

Filed Nov. 17, 1982, Ser. No. 442,424
Claims priority, application Japan, Nov. 25, 1981, 56-188596
Int. Cl.[3] G06F 15/16
U.S. Cl. 318—569 6 Claims

1. A method of sensing a current position in a position control system of the type including first and second control devices, each having at least means for generating command pulses, error storage means for computing and storing an error between the number of command pulses and feedback pulses each of which is generated whenever a motor rotates by a predetermined amount and a current position register, a speed control circuit for driving and controlling the motor on the basis of the error stored in each of said error storage means and a switching circuit for connecting said first and second control devices to the speed control circuit, which method is for updating the data in the current position register of whichever of the first and second control devices is not connected to said speed control circuit, and for enabling the unconnected control device to sense the current position of a movable element driven by the motor under the control of the connected control device, said method comprising steps of:

(a) storing the errors which are stored in the error storage means of said first and second control devices immediately before the connection to said speed control circuit is switched from said first control device to said second control device by said switching circuit;

(b) computing an arithmetic difference by subtracting the error in the error storage means of said second control device, which error was stored in step (a), from the error stored in the error storage means of said second control device after the switching operation when the movable



element has stabilized prior to being controlled by said second control device;

(c) returning the movable element to the position which prevailed prior to the switching operation by supplying said speed control circuit with an offset voltage corresponding to the computed arithmetic difference;

(d) updating the data in the current position register of said first control device, while said motor is under the control of said second control device, on the basis of an arithmetic difference found by reading the data in the error storage means of said first control device which is counting the feedback pulses, and subtracting the error in the error storage means of said first control device, which error was stored in step (a), from the read data; and

(e) revising the data in the error storage means of said first control device on the basis of the arithmetic difference found in step (c).

4,485,339

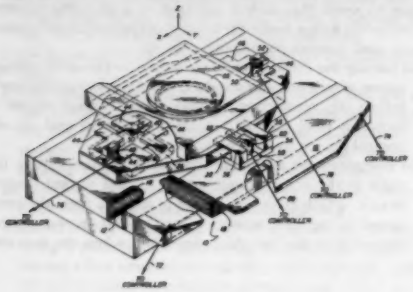
ELECTRO-MAGNETIC ALIGNMENT DEVICE

David Trost, Fairfield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jun. 10, 1983, Ser. No. 502,997
Int. Cl.[3] G05B 1/06
U.S. Cl. 318—640 10 Claims

1. An electro-magnetic alignment device comprising, in combination:
base plate means,
a first current carrying coil assembly mounted on said base plate means,
a second current carrying coil assembly mounted on said base plate means in spaced relationship with respect to the first coil assembly,
first magnet means mounted adjacent said first coil assembly,
second magnet means mounted adjacent said second coil assembly,
connecting means magnetically connecting the first and second magnet means,
means for mounting an object on said connecting means,
said base plate means and said magnet means and said connecting means coacting to form a magnetic circuit, and

means for controlling the flow and direction of current through said coil assemblies to move said two magnet



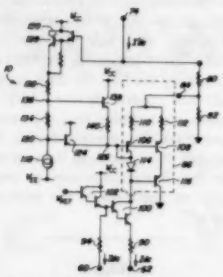
means and said connecting means with respect to said base plate means.

4,485,340
Patent Not Issued For This Number

4,485,341
CURRENT LIMITER CIRCUIT

Dennis L. Welty, Mesa, and Don W. Zobel, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 28, 1982, Ser. No. 402,496
Int. Cl.³ H04B *1/58;* **G05F** *3/20*
U.S. Cl. 323—315 **13 Claims**



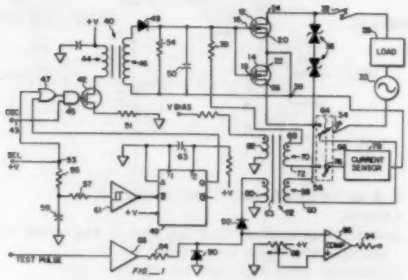
1. A current limiter, comprising:
first and second terminals each adapted to be coupled to respective first and second load utilization means;
first circuit means coupled between said first and second terminals for sourcing current to said second load utilization means from said first terminal; and
feedback circuit means responsive to the magnitude of current sourced through said first circuit means reaching a predetermined threshold value for supplying any additional current as required in excess of said predetermined threshold value such that said additional current is not sourced from said first terminal.

4,485,342
LOAD DRIVING CIRCUITRY WITH LOAD CURRENT SENSING

William D. Hill; Dennis W. Hollenbeck, both of San Jose, Calif., and Kenneth M. Schor, Sudbury, Mass., assignors to General Electric Company, San Jose, Calif.

Filed Jul. 27, 1982, Ser. No. 402,373
Int. Cl.³ H02J *3/00;* **H01H** *47/28*
U.S. Cl. 323—351 **9 Claims**

1. A circuit apparatus for driving a load in response to logic control signals, said circuit apparatus comprising:
field effect transistor means, said field effect transistor means responsive to input logic level signals for switching on and off an alternating current power source, said field effect transistor means being connected in series with said power source and said load, said power source and said load defining a load means having a first terminal and a second terminal, said field effect transistor means comprising a first field effect transistor having a first gate electrode, a first source electrode and a first drain electrode, and a second field effect transistor having a second gate electrode, a second source electrode and a signal drain electrode, said first gate electrode being common coupled

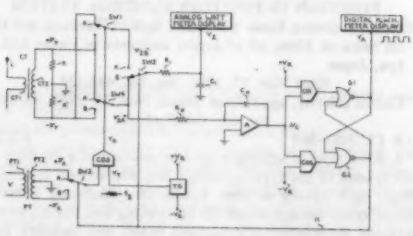


with said second gate electrode and said first source electrode being common coupled with said second source electrode, said first drain electrode being coupled to said first terminal of said load means, and said second drain electrode being coupled to said second terminal of said load means thereby to form a switched circuit for alternating current through said field effect transistor means, said first and second field effect transistors being responsive for switching to changes in voltage potential from said common coupled first and second source electrodes to said common coupled first and second gate electrodes.

4,485,343
ELECTRONIC WATT AND WATTHOUR METER HAVING ANALOG AND DIGITAL OUTPUTS WITH AUTOMATIC ERROR CORRECTION

Miran Milkovic, Scotia, N.Y., assignor to General Electric Company, Somersworth, N.H.

Filed Dec. 14, 1981, Ser. No. 330,660
Int. Cl.³ G01R *21/06, 1/02*
U.S. Cl. 324—142 **10 Claims**



1. An improved electronic combined watthour and watt meter having analog and digital outputs with automatic error correction comprising:
first transformer means having a primary winding connected to a source of electric energy for excitation in response to either the electric current or the electric voltage supplied

from the source of electric energy and a secondary winding for providing a first signal proportional thereto;

second transformer means having a primary winding connected for excitation in response to the other of the electric current or electric voltage supplied from the source of electric energy and a secondary winding for providing a second signal proportional thereto;

multiplier circuit means for receiving and multiplying said first and second signals together and deriving an output product signal representative of instantaneous power being supplied by the source of electric energy;

said multiplier circuit means comprising comparator means for receiving said first signal and a sampling signal from a sampling signal source and deriving a pulse width modulated switching signal, and multiplier switching circuit means responsive to and controlled by said pulse width modulated swtiching signal and having the second signal supplied to an input thereof for supplying at its output a pulse width modulated and amplitude modulated product signal of the first and second signals and representative of the instantaneous power being supplied by the source of electric energy;

analog-to-pulse rate converter means responsive to the pulse width modulated and amplitude modulated product signal from said multiplier switching circuit means for summing and integrating the multiplier switching circuit output product signals and converting them into a train of output signal pulses wherein each output signal pulse represents a predetermined quantized amount of electric energy;

automatic offset error correction circuit means responsive to the output from said analog-to-pulse rate converter means for automatic addition/subtraction averaging of system offset error signals during each quantizing period of operation of the analog-to-pulse rate converter means, said automatic offset error correction circuit means comprising polarity reversing switching means coupled intermediate the secondary winding of the first transformer means and the input to said comparator means and at a second output of said multiplier switching circuit means with the polarity reversing switching means being responsive to the output from the analog-to-pulse rate converter means for automaically switching the polarity of the first signals supplied to the comparator and the multiplier switching circuit means midway through the quantizing period of the analog-to-pulse rate converter means and for supplying only like polarity product signal pulses from the second output of the multiplier switching circuit means to cause an up/down integration of unlike polarity pulse width modulated/amplitude modulated product signal pulses from the output of the multiplier switching circuit means over each quantizing period of operation of the analog-to-pulse rate converter means and simultaneously producing a sequential addition/subtraction of like polarity offset error signals over each quantizing period of operation to thereby cancel out the offset error signals automatically; and

low pass filter circuit means coupled through said polarity reversing switching circuit means to the second output from multiplier switching circuit means for integrating only like polarity pulse width modulated and amplitude modulated product signal pulses and deriving an output signal indicative of the total watts being supplied by the source of electric energy.

4,485,344

APPARATUS FOR ELECTROMAGNETICALLY MEASURING THE OVALIZATION OF A FERROMAGNETIC PIPE

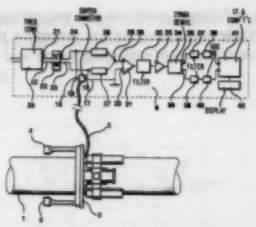
Bruno J. M. de Sivry; Jean-Louis Migliarese-Caputi, both of Paris; Guy J. Hervé, Nantes; Michel P. Baylot, Marseilles; Claude J. Colas, Nantes, and Pierre Baudet, Etrechy, all of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed Oct. 15, 1981, Ser. No. 311,740

Claims priority, application France, Oct. 29, 1980, 80 23088

Int. Cl.³ G01B *7/14;* **G01N** *27/72;* **G01R** *33/12*

U.S. Cl. 324—207 **9 Claims**



1. Apparatus for measuring the ovalisation of a pipe, comprising a collar, means for fastening said collar around a pipe, a measurement module mounted on said collar, a circular track supported by said collar, a circular slide member disposed on said track, means for moving said slide member on said track, at least one longitudinal arm solid with said slide member and extending longitudinally of the pipe, an electromagnetic pickup aligned normal to the longitudinal axis of said pipe and fixed on said arm, said pickup transmitting a signal which is influenced by the radial distance between said pickup and said pipe, an electric energy supply and signal processing means comprising comparison means and associated memory means for comparing the transmitted signal with a plurality of signal values supplied by previous measurements, made on a similar pipe and stored in said memory means, to obtain therefrom indications relating to the distance between said locations and said pipe, and electrical connection means between said supply and processing means of said measurement module for permitting the transmission to said supply and processing means of signals transmitted by said electromagnetic pickup, wherein said supply and processing device comprises an alternating-current voltage supply including a synchronous demodulator means for receiving signals transmitted by said electromagnetic pickup and for supplying, from one input signal, two output signals related to the amplitude and the phase of the input signal.

4,485,345

METHOD AND APPARATUS FOR CONDUCTING GROUND MAGNETIC SURVEYS

Christian D. Anderson, 826 Dorchester Ave., Winnipeg, Manitoba, Canada R3M 0R7, and James R. Loiselle, 731 Sabrina Rd. SW., Calgary, Alberta, Canada T2W 0P4

Continuation-in-part of Ser. No. 270,922, Jun. 5, 1981, abandoned. This application Jan. 11, 1984, Ser. No. 569,839

Int. Cl.³ G01V *3/08, 3/165, 3/36*

U.S. Cl. 324—345 **2 Claims**

1. An apparatus for conducting magnetic surveys of the surface or sub-surface geophysical structures or lithologies comprising support means, a magnetometer and recording means for directly recording readings from said magnetometer on a visual recording medium both of which are mounted on said support means for manual transportation by an operative whereby the operative can move from one recording location to the next on foot, said recording means including switch means manually operable by said operative for actuating the

recording of a reading at said location from said magnetometer on said recording medium, manually operable switch means for advancing the recording medium in steps of predetermined length, manually operable switch means for actuating means

for recording a fiducial mark on the recording medium and manually operable switch means for reversing the polarity of recording of chosen ones of said readings on said visual recording medium.

4,485,346

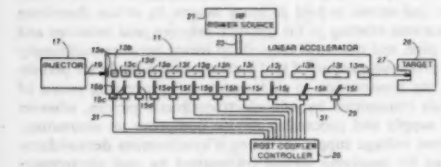
VARIABLE-ENERGY DRIFT-TUBE LINEAR ACCELERATOR

Donald A. Swenson; Thomas J. Boyd, Jr.; James M. Potter, and James E. Stovall, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 15, 1982, Ser. No. 398,507

Int. Cl.³ H05H 9/02, 7/12

U.S. Cl. 328—233 **7 Claims**



1. A variable-energy linear accelerator system comprising;

a linear accelerator having an input for receiving a particle beam at a particular energy level and an output for emitting said particle beam at a higher energy level;

a plurality of drift-tubes forming a chain thereof between said input and said output of said linear accelerator;

rf source means coupled to said linear accelerator for providing an rf field therein for accelerating said particle beam through said plurality of drift-tubes;

a plurality of post couplers within said linear accelerator, each post coupler thereof individually associated with an individual drift-tube in said plurality thereof, each post coupler thereof being positionable to a first and second position, said first position being an rf field unperturbing position and said second position being an rf field perturbing position;

controllable positioning means coupled to each post coupler in said plurality thereof for positioning each post coupler selectively to said first and said second positions; and

control means coupled to said positioning means for controlling the position of each post coupler in said plurality thereof.

4,485,347

DIGITAL FSK DEMODULATOR

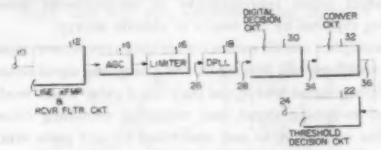
Shigeichi Hirasawa, and Akira Horiguchi, both of Kobe, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 17, 1981, Ser. No. 293,266

Claims priority, application Japan, Sep. 4, 1980, 55-123045; Sep. 4, 1980, 55-123046; Sep. 4, 1980, 55-123049

Int. Cl.³ H03D 3/18; H04L 27/14

U.S. Cl. 329—50 **4 Claims**



1. A frequency shift keying demodulator comprising a rectangular waveform converter circuit for converting a frequency shift keying modulated input signal having either a high frequency or a low frequency to a signal having a rectangular waveform, a digital phase locked loop circuit for generating pulses in synchronism with the phase of said rectangular waveform from said rectangular waveform converter circuit and having pulse widths relating to said high frequency and said low frequency of said input signal, a clock pulse generator circuit for generating a train of clock pulses having a predetermined pulse repetition period, a first reversible counter for counting said clock pulses in an up direction when a pulse output from said digital phase locked loop circuit is at a high level and for counting said clock pulses in a down direction when said output from said digital phase locked loop circuit is at a low level, said clock pulses being counted between a leading edge of each pulse of said pulse output and that of the next succeeding pulse thereof, a second reversible counter for counting said clock pulses in the down direction when said output from said digital phase locked loop circuit is at a low level and for counting said clock pulses in the up direction when said output from said phase locked loop circuit is at a high level, said clock pulses being counted between a trailing edge of each pulse of said pulse output and that of the next succeeding pulse thereof, a register for deriving first and second alternating outputs from said first and second reversible counters, a read only memory for multiplying said first output from said register by a ratio of said low frequency to said high frequency of said input signal, and a digital first-order low-pass filter for removing the high frequency component from an output of said read only memory, said low-pass filter supplying a demodulated signal output.

4,485,348

FULL WAVE ENVELOPE DETECTOR USING CURRENT MIRRORS

Geoffrey W. Perkins, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 1, 1982, Ser. No. 383,684

Int. Cl.³ H03D 1/14; H02M 7/217

U.S. Cl. 329—101 **5 Claims**

1. A full wave bridge envelope detector, comprising:

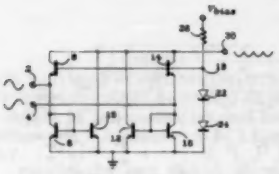
first rectifier means receiving a first altenrating input signal for producing a first half-wave rectified version of said first alternating input signal, said first rectifier means including first diode means having an anode for receiving said first alternating input signal and having a cathode for coupling to a first source of supply voltage, and a first transistor having an emitter for coupling to said first source of supply voltage, a collector coupled to an output node and a base coupled to the anode of said first diode means;

second recitifer means receiving a second alternating input

signal, 180 degrees out of phase with said first alternating input signal, for producing a second half-wave rectified version of said first alternating input signal;

third rectifier means receiving said second alternating input signal and coupled to said second rectifier means for producing a first half-wave rectified version of said second alternating input signal;

fourth rectifier means coupled to said first rectifier means



and receiving said first alternating input signal for producing a second half-wave rectified version of said second alternating input signal;

and

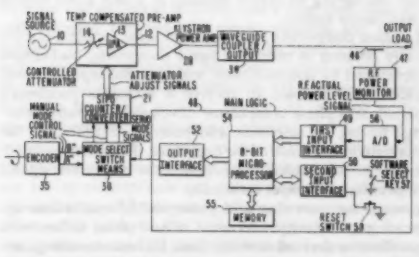
means for summing said first and second half-wave rectified versions of said first alternating input signal and said first and second half-wave rectified versions of said second alternating input signal to produce a fullwave rectified version indicative of said envelope at said output node.

4,485,349

STABILIZED MICROWAVE POWER AMPLIFIER SYSTEM

Larry E. Siegel, San Jose; John M. Pavkovich, Palo Alto, and George E. Jahn, Los Altos, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Apr. 8, 1983, Ser. No. 483,313
Int. Cl.³ H03F *5/00*; H03G *3/20*
U.S. Cl. 330—3 **23 Claims**



1. A stabilized klystron power amplifier system for use with a regulated voltage supply furnishing a regulated voltage, said system comprising:

a klystron amplifier tube;

solid-state preamplifier means for driving said klystron, said preamplifier having a variable gain as a function of temperature;

means for periodically sampling the actual microwave output power from said klystron;

means for converting said periodic sample to a digital signal representing said actual output power;

microprocessor means for comparing said digital signal to digital reference signals representative of a reference output power level and generating digital correction signals;

first solid-state variable attenuator means in series with said preamplifier means for varying the gain of said preamplifier in response to said correction signals;

means for furnishing a compensation voltage varying inversely to said variable gain in response to changes in ambient temperature, said means accepting said regulated voltage for reference purposes;

second solid-state variable attenuator means in series with said preamplifier means and responsive to said compensation voltage for varying the gain of said preamplifier accordingly;

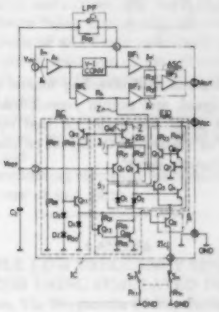
whereby the magnitude of said output power is stabilized at said reference power level.

4,485,350

VARIABLE ELECTRONIC IMPEDANCE CIRCUIT

Tetsuo Sato, Takasaki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 2, 1982, Ser. No. 384,717
Claims priority, application Japan, Aug. 26, 1981, 56/132764
Int. Cl.³ H03F *1/34*
U.S. Cl. 330—86 **11 Claims**



1. A variable electronic impedance circuit comprising:

(a) voltage-current converter having an input terminal which is supplied with an input signal voltage;

(b) a variable-gain current amplifier having an input terminal which is connected to receive an output current of said voltage-current converter, and including feedback means for feeding an output signal current of said variable-gain current amplifier to said input terminal of said voltage-current converter;

(c) a power supply circuit for supplying operating power to said voltage-current converter and said variable-gain current amplifier;

(d) means coupled to said variable-gain current amplifier for controlling the impedance at said input terminal of said voltage-current converter; and

(e) control means for inhibiting said feedback means for a predetermined period of time after closure of said power supply circuit.

4,485,351

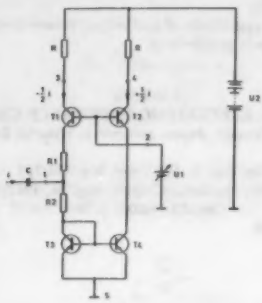
CIRCUIT FOR DERIVING OF SIGNALS AND COUNTER CYCLE SIGNALS FROM ONE SIDED INPUT SIGNAL

Hans R. Schemmel, and Ingo Reichelt, both of Nuremberg, Fed. Rep. of Germany, assignors to Philips Kommunikations Industrie AG, Nuremberg, Fed. Rep. of Germany

PCT No. PCT/EP81/00087, § 371 Date Sep. 28, 1981, § 102(e) Date Sep. 28, 1981, PCT Pub. No. WO82/00227, PCT Pub. Date Jan. 21, 1982
PCT Filed Jun. 27, 1981, Ser. No. 308,538
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—288 **6 Claims**

1. A circuit for deriving balanced output signals from a one-sided input signal, comprising a pair of transistors having interconnected bases and each including a collector and an emitter electrode defining a collector-emitter path; a current

reflecting circuit; coupling means including at least one resistor for connecting two equal electrodes in said collector-emitter paths of said pair of transistors to said current reflecting circuit; an adjustable direct current voltage source connected to the interconnected bases of said pair of transistors; an input



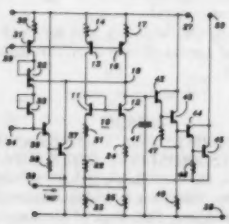
connection provided in said coupling means to receive said one-sided input signal; and output connections provided respectively at the other electrodes of said collector-emitter paths of said pair of transistors to tap off an output signal and an output counter-cycle signal.

4,485,352

CURRENT AMPLIFIER

Robert B. Davies, Tempe; Robert N. Dotson, and Michael W. Null, both of Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 30, 1982, Ser. No. 413,052
Int. Cl.[3] H03F *3/04*
U.S. Cl. 330—288 **6 Claims**



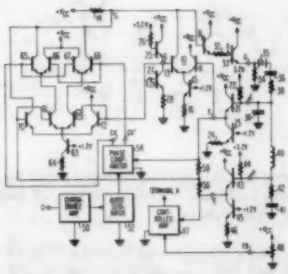
1. A current amplifier for providing a high current output comprising: a current mirror having an output; current source means coupled to the current mirror for providing current to the current mirror; control means coupled between an input of the current amplifier and the output of the current mirror for inhibiting the output upon command of an control signal; and a Darlington arrangement coupled to and driven by the output of the current mirror for providing a high current output.

4,485,353

PLL OSCILLATOR SYNCHRONIZING SYSTEM WITH MATRIX FOR PHASE CORRECTION

Ta-Fang Fang, Belle Mead; Erwin J. Wittmann, North Plainfield; Leopold A. Harwood, and Jack Craft, both of Bridgewater, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 28, 1982, Ser. No. 383,263
Int. Cl.[3] H03L *7/08*
U.S. Cl. 331—8 **6 Claims**



1. A phase locked loop oscillator synchronizing system comprising the combination of:

(1) an oscillator including:

(a) a non-inverting signal amplifier having an input terminal, and an output terminal; and

(b) a band pass filter electrically coupled between said output terminal and said input terminal of said non-inverting amplifier to provide said non-inverting amplifier with a path for positive feedback permitting the development by said oscillator of oscillations at a frequency within the pass band of said filter;

(2) a phase shifter having an input terminal electrically coupled to receive said oscillations developed by said oscillator and having an output terminal at which phase shifted oscillations appear;

(3) a phase comparator, having a first input terminal electrically coupled to receive a signal comprising oscillations developed by said oscillator, and a second input terminal electrically coupled to receive a reference oscillatory signal, said phase comparator developing a control voltage having an amplitude and polarity indicative of the magnitude and sense of the departure, if any, from a quadrature phase relationship between the respective signals appearing at its input terminals;

(4) means for matrixing said phase shifted oscillations appearing at the output terminal of said phase shifter with oscillations derived directly from said non-inverting amplifier to form a matrix output signal exhibiting a phase intermediate the phases of said phase shifted oscillations and said directly derived oscillations;

(5) an inverting amplifier, responsive to said matrix output signal for developing a phase-inverted version of said matrix output signal of a substantially fixed magnitude;

(6) controlled amplifier means, responsive to said matrix output signal and to said control voltage, for subjecting said matrix output signal to amplification with inversion when a departure of one sense occurs between the respective signals appearing at the input terminals of said phase comparator, and for subjecting said matrix output signal to amplification without inversion when a departure of the opposite sense occurs between the respective signals appearing at the input terminals of said phase comparator, with the degree of said amplification of said matrix output signal by said controlled amplifier means being dependent upon the magnitude of said departure from said quadrature phase relationship; and

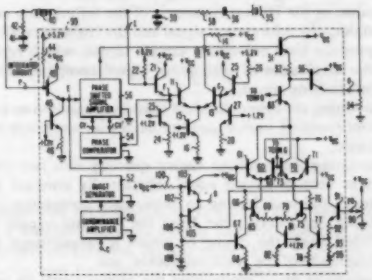
(7) means for combining the respective outputs of said inverting amplifier and said controlled amplifier means with the output of said non-inverting amplifier.

4,485,354

PLL OSCILLATOR SYNCHRONIZING SYSTEM WITH DC CONTROL OF FREE-RUNNING FREQUENCY

Robert L. Shanley, II, Indianapolis, Ind., and Leopold A. Harwood, Bridgewater, N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 28, 1982, Ser. No. 383,303
Int. Cl.³ H03L 7/08
U.S. Cl. 331—8 8 Claims



1. In an oscillator synchronizing system including (1) an oscillator comprising a non-inverting amplifier having an input terminal and an output terminal, and a band pass filter electrically coupled between said output terminal and said input terminal; (2) a phase shifter having an input terminal electrically coupled to receive signals from said non-inverting amplifier, and having an output terminal; (3) a phase comparator, having a first input terminal electrically coupled to receive signals from said non-inverting amplifier, and a second input terminal electrically coupled to receive a reference oscillatory signal, said phase comparator developing a first control voltage having an amplitude and polarity indicative of the magnitude and sense of the departure, if any, from a quadrature phase relationship between the respective signals appearing at its input terminals; and (4) controlled means, responsive to signals appearing at said phase shifter output terminal and to said first control voltage, for delivering phase shifted signals to said output terminal of said non-inverting amplifier with an amplitude and polarity dependent upon the amplitude and polarity of said first control voltage; apparatus for adjusting the free-running frequency of said oscillator comprising:

an adjustable DC voltage source for providing a second control voltage of an adjustable magnitude;

means, independent of said controlled means and responsive to signals appearing at said phase shifter output terminal, to said second control voltage, and to a reference DC voltage, for developing additional phase shifted signals of a magnitude and polarity dependent upon the magnitude and sense of the difference, if any, between the respective magnitudes of said second control voltage and said reference DC voltage; and

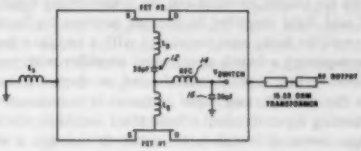
means for supplying said additional phase shifted signals to said output terminal of said non-inverting amplifier.

4,485,355

SWITCHED GEOMETRY OSCILLATOR

Bentley N. Scott, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 2, 1982, Ser. No. 345,265
Int. Cl.³ H03B 5/12, 5/18
U.S. Cl. 331—117 FE 10 Claims



1. An oscillator comprising:

a plurality of transistors, each said transistor comprising a gate, a source, and a drain, said respective sources of all of said transistors being electrically common, and said respective drains of all of said transistors being electrically common, and at least one of said respective gates being RF-coupled to and DC-isolated from the others of said respective gates;

means, connected to at least one of said gates, for selectably biasing at least one but less than all of said transistors to pinch-off; and

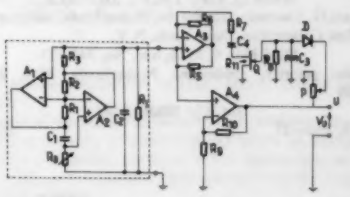
frequency determining electrical reactance means connected to at least one of said gates.

4,485,356

VARIABLE LOW FREQUENCY SINUSOIDAL OSCILLATOR USING SIMULATED INDUCTANCE

Lorenzo Fassino, Via Borgosesia 46 bis, Turin, Italy

Filed Jun. 4, 1982, Ser. No. 385,067
Int. Cl.³ H03B 5/26
U.S. Cl. 331—132 1 Claim



1. A variable low frequency sinusoidal oscillator, including a resonant circuit with variable Q factor consisting of: a first capacitor; a simulated inductance connected in parallel with said first capacitor and comprising the series of a first resistor, of a second capacitor and of second, third and fourth resistors, in which series the first resistor has one terminal connected to earth and can be used as the only element connected to earth to vary the oscillation frequency, the simulated inductance further comprising a first and a second operational amplifier each having an inverting input terminal, a noninverting input terminal and an output terminal, the inverting input terminal of said first and second amplifiers being connected to each other and to a common terminal of said second and third resistors, the noninverting input terminal of the first amplifier being connected to one terminal of the fourth resistor and the noninverting input terminal of said second amplifier being connected to a common terminal of said first resistor and said second capacitor, the output of the first amplifier being connected to a common terminal of the second capacitor and the second resistor and the output of the second amplifier being connected to a common terminal of said third and fourth resistors; a fifth

resistor connected in parallel with said first capacitor and having a resistance which can be varied to vary the Q factor of the resonant circuit; wherein, to provide oscillation, a third operational amplifier also having an inverting input terminal, a noninverting input terminal and an output terminal is provided, the noninverting input terminal of said third amplifier being connected to a common terminal of said fourth and fifth resistors and said first capacitor, a sixth resistor being connected between the output terminal and the noninverting input terminal of said third amplifier to provide positive feedback, said third amplifier being also associated with a negative feedback loop comprising a fourth operational amplifier with inverting and noninverting input terminals and an output terminal in which the noninverting input terminal is connected to the noninverting input terminal of said third amplifier, the inverting input terminal is connected to earth through a seventh resistor and to the output terminal through an eighth resistor, the output terminal of said fourth amplifier being the fixed level oscillator output terminal, the negative feedback loop further comprising: a potentiometer connected between said output terminal of the fourth amplifier and earth, which potentiometer is used to adjust for minimum distortion and has a sliding contact through which a feedback signal is derived; a diode with a cathode and an anode, the cathode being connected to said sliding contact and the anode being connected to one terminal of a ninth resistor and of a third capacitor, both having a second terminal connected to earth; a field effect transistor with gate, source and drain terminals, of which the gate terminal is connected to the anode of said diode, the drain terminal is connected to earth and the source terminal is connected to the inverting input of said third amplifier through a fourth capacitor and a tenth resistor in series, an eleventh resistor being connected between the inverting input terminal and the output terminal of said third amplifier.

4,485,357

CIRCUIT FOR AMPLITUDE AND PHASE MODULATION OF CARRIER SIGNAL BY TWO RESPECTIVE INPUT SIGNALS

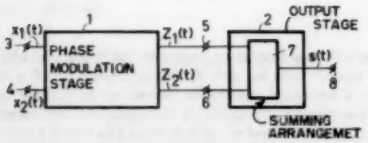
Johannes O. Voorman, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 8, 1982, Ser. No. 346,703

Claims priority, application Netherlands, Mar. 9, 1981, 8101109

Int. Cl.³ H03C *5/00*

U.S. Cl. 332—17 **15 Claims**



1. An electronic arrangement for generating an amplitude and phase-modulated carrier signal, said arrangement comprising a phase modulation stage having first and second inputs for receiving two respective modulation signals, said modulation stage being under the control of the modulation signals and generating in use two different phase-modulated signals having the same carrier frequency and substantially the same amplitude, and an output stage to which said phase-modulated signals are applied for assembling by means of summation of said phase-modulated signals to produce said amplitude and phase-modulated carrier signal the amplitude of which is modulated in dependence on the phase difference of said phase-modulated signals and the phase of which is modulated in dependence on the sum of the phases of said phase-modulated signals.

4,485,358

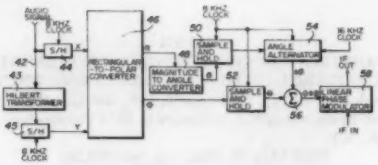
METHOD AND APPARATUS FOR PULSE ANGLE MODULATION

Carl F. Andren, Indiatlantic; William H. Mosley, Jr., St. Petersburg, and David E. Sanders, Kenneth City, all of Fla., assignors to E-Systems, Inc., Dallas, Tex.

Filed Sep. 28, 1981, Ser. No. 306,507

Int. Cl.³ H03C *3/00*

U.S. Cl. 332—23 R **4 Claims**



1. A method for phase modulating a carrier signal to convey an information signal comprising the steps of:

producing the Hilbert transform of the information signal;

sampling the information signal and the Hilbert transform to produce time coincident sample signals which represent the amplitudes of orthogonal signal components of the information signal;

converting the time coincident sample signals into an equivalent resultant vector quantity having an amplitude and an angle;

converting the resultant vector quantity into two component vectors having equal substantially constant amplitudes and each having an angle, each component vector being oppositely offset from the resultant vector by an offset angle the cosine of which is proportional to the amplitude of the resultant vector; and

sequentially phase modulating the carrier signal by each of the component vector angles during each sample period of the information signal, thereby maintaining a constant amplitude envelope for the carrier signal.

4,485,359

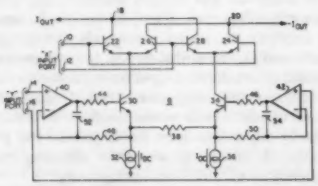
AMPLITUDE MODULATOR HAVING SUBSTANTIALLY ZERO MODULATION DISTORTION

Daniel B. Talbot, 1 Dean St., Hudson, Mass. 01749

Division of Ser. No. 242,571, Mar. 11, 1981, Pat. No. 4,403,194. This application Mar. 28, 1983, Ser. No. 479,856

Int. Cl.³ H03C *1/44*

U.S. Cl. 332—31 T **12 Claims**



8. An amplitude modulator comprising:

a common-emitter diffential amplifier;

means for applying a carrier signal to said differential amplifier; and

means for applying a modulation signal to said common emitters of said differential amplifier so that an amplitude modulated signal is provided at the output of said differential amplifier, said means for applying said modulation signal comprising an operational amplifier having one input coupled to receive a modulation input signal and the other input coupled to its output so as to form a feedback

path for said operational amplifier, a transistor having its base-emitter junction connected in said feedback path and its collector coupled to said common-emitters for applying said modulation signal to said common emitters;

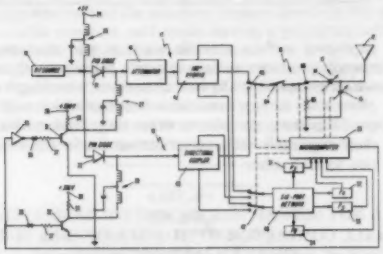
wherein the amplitude transfer function between said one input of said operational amplifier and said collector of said transistor is substantially linear.

4,485,360

APPARATUS FOR AND METHOD OF IMPEDANCE MATCHING

Glen Seward, Cincinnati, Ohio, assignor to Cincinnati Electronics Corporation, Cincinnati, Ohio

Filed Jul. 16, 1982, Ser. No. 398,852
Int. Cl.³ H03H 7/40
U.S. Cl. 333—17 M **29 Claims**



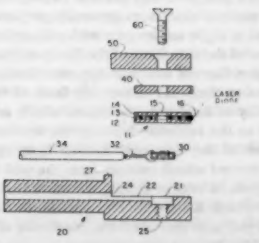
12. Apparatus for matching an rf load to an rf source comprising a matching network having variable matching impedances connected between the source and load, a network coupled to the load for deriving a first rf signal responsive to rf energy reflected from the load, another network responsive to the first rf signal for deriving plural rf signals, each having an amplitude that is a different function of the magnitude and phase angle of the reflected energy, and means responsive to the amplitudes of the plural rf signals for controlling the values of the variable matching impedances.

4,485,361

PULSE TRANSFORMER PACKAGE FOR IMPEDANCE MATCHING A LASER DIODE TO A TRANSMISSION LINE

Gerald M. Bender, St. Louis, Mo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 23, 1982, Ser. No. 452,604
Int. Cl.³ H03H 7/38
U.S. Cl. 333—32 **9 Claims**



1. Apparatus for packaging an electronic device having at least two terminals and matching its impedance to the impedance of a transmission line, said apparatus comprising:

a body of electrically conductive material having a surface in which a cavity is formed;

a toroidal transformer positioned in said cavity having a primary winding thereabout and means for connecting said primary winding to the transmission line;

a cover of electrically conductive material;

center conductor means extending from said body through said toroidal transformer;

mounting means for said electronic device such that an electrical path which includes said body, said center conductor means and said cover is connected to said two terminals to form a one turn secondary for the toroidal transformer, driving the electronic device;

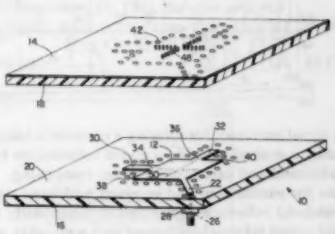
wherein said body includes a hole generally centered below said cavity, said cover has a hole through it, and said center conductor means is a fastening means passing through the hole of the cover, the toroidal transformer, and the hole of the body to fasten the apparatus together.

4,485,362

VARIABLE MICROWAVE STRIPLINE POWER DIVIDER

Morris Campi; Frederick Farrar, and Daniel Shames, all of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 29, 1982, Ser. No. 437,607
Int. Cl.³ H01P 5/04
U.S. Cl. 333—128 **13 Claims**



1. A variable microwave stripline power divider, which comprises:

an electrically-conductive planar patch member which includes a plurality of contact points and a perimeter, the perimeter including an input, a first output spaced from the input, and a second output spaced from the input and the first output;

at least one electrically-conductive planar ground plane member which is disposed adjacent to and spaced from the patch member in a plane parallel to the plane of the patch member;

a dielectric material disposed about the patch member and between the patch member and the at least one ground plane member, the dielectric material and the dimensions of the patch member being selected such that the patch member behaves as a resonant cavity for a microwave signal of given frequency supplied to the patch member input;

signal input means for feeding said microwave signal to the patch member input;

first signal output means for feeding out of the patch member a first microwave output signal appearing at the patch member first output;

second signal output means for feeding out of the patch member a second microwave signal appearing at the patch member second output; and

adjustable means for determining the coupling to at least one of the two patch member outputs, which includes connecting means for electrically connecting the at least one ground plane member with at least one patch member

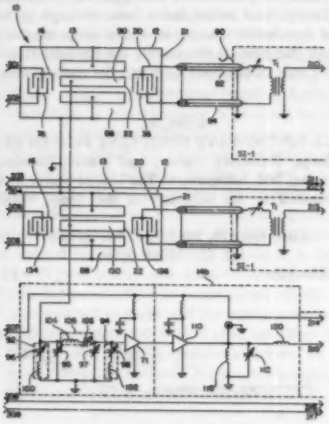
contact point selected from the plurality of patch member contact points.

4,485,363

SIGNAL PROCESSOR USING SURFACE ACOUSTIC WAVES

Billy J. Hunsinger, Mahomet; Sears W. Merritt, Elgin, and David A. Swanson, Mt. Prospect, all of Ill., assignors to Gould, Inc., Rolling Meadows, Ill.

Filed Dec. 28, 1981, Ser. No. 334,779
Int. Cl.³ H03H *9/72, 9/64;* G06G *7/195*
U.S. Cl. 333—193 **30 Claims**



1. A signal processor for filtering a received wideband signal containing a desired signal in a coded information format and both wideband and narrowband noise, comprising:

means for partitioning said received wideband signal and a wideband reference signal that is functionally related to said coded information format into a plurality of narrowband received and reference signals;

means for convolving said narrowband received and reference signals with one another to filter said wideband noise from said received signal and to produce a plurality of narrowband output signals; and

means for monitoring each of said narrowband output signals and for reducing the voltage of any narrowband signal when said signal exceeds a predetermined level.

4,485,364

REFLECTION-COMPENSATED SURFACE ACOUSTIC WAVE TRANSDUCER

Adrian J. DeVries, Richland, Wash., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed May 17, 1983, Ser. No. 495,376
Int. Cl.³ H03H *9/64, 9/145*
U.S. Cl. 333—194 **10 Claims**

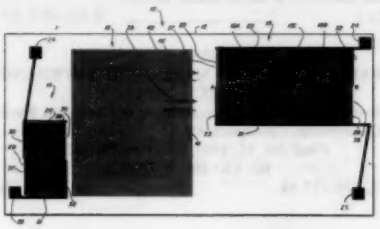
1. A reflection-compensated surface acoustic wave interdigital transducer designed to operate at a selected operating frequency and being of the type having a pair of bus bars, and interdigitated finger means connected to respective ones of said bus bars, and defining an axial direction toward which a surface acoustic signal may be emitted or from which it may be received, at least one end at which such a signal may enter said transducer or exit therefrom, and a maximium efective signal-receiving or signal-emitting aperture extending in a direction transverse to said axial direction, wherein:

the entire length of the end finger means of said transducer at said one end is connected directly or indirectly to at least one of said bus bars;

said end finger means extends only partially across said aperture,

the space which is colinear with said end finger across the remaining portion of said aperture is substantially unoccupied by any surface-acoustic-wave-reflective structure;

and said end finger means is so positioned that an axially



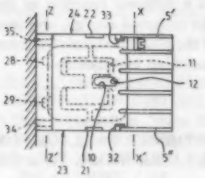
impinging surface acoustic wave at said operating frequency produces surface acoustic reflections therefrom which are substantially half an acoustic wavelength out of phase with surface acoustic reflections which said wave produces from the nearest other finger means, whereby their respective acoustic reflections are in phase-opposition to each other.

4,485,365

SMALL CONTACTOR WITH A REMOVABLE SUBSET OF AUXILIARY SWITCHES

Gérard Lerude, Poitiers, and Jacques Lesoile, Mirebeau, both of France, assignors to La Telemecanique Electrique, France

Filed Feb. 14, 1983, Ser. No. 466,198
Claims priority, application France, Feb. 12, 1982, 82 02352
Int. Cl.³ H01H *51/02*
U.S. Cl. 335—132 **8 Claims**



1. An electric control device comprising:

(a) a plane supporting member;

(b) a first insulating housing having a base mounted on the plane supporting member; said first housing further having a front face generally parallel to said base and first and second pairs of side faces generally perpendicular to said base and at right angles one with respect to the other, at least one of the side faces of the first pair forming, in a first end region thereof which is opposite the base and extends from one to the other of the side faces of the second pair, a plurality of insulating partitions which are substantially parallel to the said side faces of the second pair, the said side face of the first pair further forming, in a second region thereof which extends from the said base to the first end region, a recess having a substantially flat bottom surface which is substantially parallel to the side faces of the first pair and extends from one to the other of the side faces of the second pair;

(c) a first stationary and movable contact combination mounted in said first housing and disposed to open and close an electric circuit;

(d) operating means mounted in said first housing and dis-

posed to open and close the first stationary and movable contact combination, the said operating means comprising a coil and movable armature combination;

(e) first terminals connecting the said electric circuit to the said first stationary and movable contact combination, the respective first terminals being located between the respective insulating partitions and forming at least one row which is substantially parallel to the base and to the side faces of the first pair;

(f) slot-like means provided in said bottom surface and generally parallel to the side faces of the second pair and to the direction of motion of the said movable armature;

(g) a second insulating housing removably mounted in said recess in engagement upon the bottom surface thereof and mounted within said second housing, and an auxiliary contact device having a second stationary and movable contact combination and an insulating movable contact carrying structure;

(h) means for removably coupling the movable contact-carrying structure of the auxiliary contact device to the said movable armature, said means having a projection which extends through said slot-like means;

(i) hinging means having a pivotal axis substantially parallel to the base and to the side faces of the first pair and removably connecting the second housing to the base and

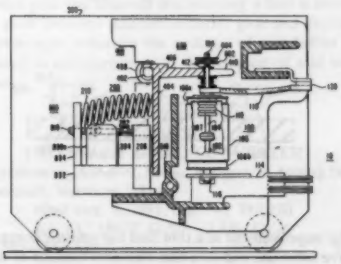
(j) resilient locking means removably connecting the second housing to the first end region of the first housing.

4,485,366

MECHANICAL INTERLOCK MECHANISM FOR A VACUUM CONTACTOR

Robert T. Bassett, Hendersonville, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 19, 1983, Ser. No. 486,588
Int. Cl.³ H01H 9/20; F16H 21/44
U.S. Cl. 335—160 **14 Claims**



9. A mechanical interlock for a vacuum contactor including a vacuum interrupter having a stationary contact and a moveable contact enclosed in an evacuated chamber with a portion of the moveable contact extending out through the chamber via a gas-tight seal, the moveable contact transferable between an open position and a closed position with respect to the stationary contact, a shaft connected outside of the evacuated chamber to the extended portion of the moveable contact such that the movement thereof between the open and closed positions rotates the shaft through an arc about the longitudinal axis thereof, and a housing, comprising:

a first arm having a free end and radially extending from the shaft;

roller means mounted adjacent the free end of the first arm for providing a rotatable connecting point thereon;

a second arm having a free end in a slot in the other end thereof for slidably engaging and pivoting about the roller means;

pivot means positioned intermediate the ends of the second arm for allowing the arcuate motion of the second arm, the radial distance between the roller means and the pivot means being less than the radial distance between the shaft and the roller means thereby increasing the length of an arc circumscribed by the free end of the second arm in relation to the length of an arc circumscribed by the free end of the first arm as the moveable contact transfers between the open and closed positions;

a third arm mounted on the housing and moveable between a first position and a second position with one end thereof adjacent the free end of the second arm, the first arm, second arm and third arm cooperating in the following manner:

(a) when the third arm is at the first position, the moveable contact can move between the open and closed positions;

(b) when the moveable contact is in the open position and the third arm is in the second position, the end thereof adjacent the free end of the second arm blocks the arcuate path of the second arm, thereby preventing the moveable contact from transferring from the open position to the closed position; and

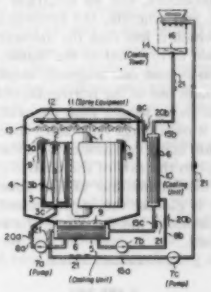
(c) when the moveable contact is in the closed position, the free end of the second arm blocks the path of the end of the third arm preventing the third arm from moving to the second position thereof.

4,485,367

COOLING APPARATUS FOR A GAS INSULATED TRANSFORMER

Kenichi Hashizume, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 18, 1982, Ser. No. 442,643
Claims priority, application Japan, Dec. 25, 1981, 56-209380
Int. Cl.³ H01F 27/10
U.S. Cl. 336—57 **10 Claims**



1. A cooling apparatus for a gas insulated transformer, said cooling apparatus comprising:

(a) a tank in which an insulating gas is sealed;

(b) a transformer located in said tank, said transformer having an iron core and coils wound around said iron core and being insulated electrically by said insulating gas inside said tank;

(c) fluid coolant for cooling said transformer;

(d) contacting means for contacting said transformer with said fluid coolant while said fluid coolant is in its liquid phase, thereby cooling said transformer when the heat of said coils converts part of said fluid coolant in its liquid phase into vapor;

(e) condensing means for generating a mist of said fluid coolant in its liquid phase in the interior of said tank and for causing said mist to directly contact said vapor to condense said vapor back into the liquid phase of said fluid coolant;

(f) a feed device for collecting said fluid coolant after it has been condensed back into its liquid phase and for feeding

said fluid coolant in its liquid phase to said contacting means and to said condensing means; and

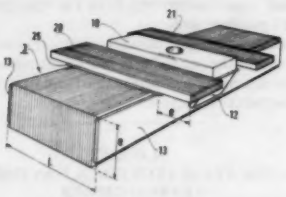
(g) a cooling device which cools said fluid coolant in its liquid phase while it is being fed to said contacting means and to said condensing means so that the temperature of said fluid coolant in its liquid phase fed to said condensing means is lower than the temperature of said fluid coolant in its liquid phase fed to said contacting means.

4,485,368

ELECTRICAL SHUNT REACTOR COIL

Gérard Messé , Maule, France, assignor to Alsthom-Atlantique, Paris, France

Filed Nov. 29, 1982, Ser. No. 444,909
Claims priority, application France, Nov. 30, 1981, 81 22353
Int. Cl.³ H01F *27/24*
U.S. Cl. 336—84 M **4 Claims**



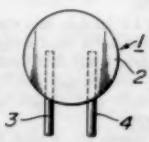
1. An electrical shunt reactor coil comprising a rectangular magnetic frame in the form of two laterally spaced vertical members interconnected at their ends by upper and lower horizontal yoke members, respectively, said frame members being constituted by respective stacks of magnetic laminations, a central core extending across the middle of the frame parallel to the vertical members, and an electrical winding situated around the core, and wherein, the horizontal yoke members are of width L which is less than the diameter of the winding and which is close to or equal to the diameter of the central core, and wherein at least one magnetic shunt is placed across the outside of at least one of the horizontal yoke members, said at least one shunt being longer than the width L of the yoke member so that it overhangs both sides thereof, said at least one magnetic shunt being constituted by a stack of laminations extending parallel to the axis of the central core and being at right angles to the laminations of the yoke member across which the shunt is placed; the improvement wherein said at least one magnetic shunt has the shape of a rectilinear rectangular parallelipiped..

4,485,369

SENSOR FOR MEASURING AIR-FUEL RATIO

Yoshiro Ushida, Toyoake, Japan, assignor to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Dec. 17, 1981, Ser. No. 331,753
Claims priority, application Japan, Feb. 10, 1981, 56-18301
Int. Cl.³ G01N *27/12*
U.S. Cl. 338—34 **2 Claims**



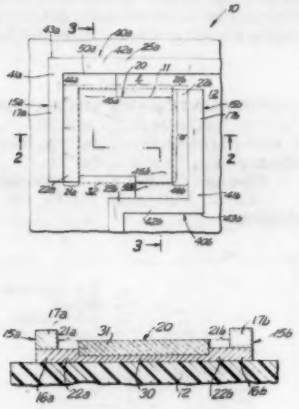
1. A sensor for measuring air-fuel ratio of a gas wherein the oxygen content in the gas is sensed through the measurement of the electrical resistance of the sensor, comprising a porous oxygen-ion-conductive solid electrolyte sintered body having a pellet-like shape formed from an oxygen ion-conductive solid electrolyte selected from the group consisting of ZrO_2 and ThO_2 and including a stabilizing material selected from the group consisting of Y_2O_3, CaO, and MgO, said body having an apparent porosity of from about 5% to about 40%, and two heat-resistant metal wires embedded therein at a given interval for measuring the electrical resistance thereof.

4,485,370

THIN FILM BAR RESISTOR

C. Edward Poisel, Indianapolis, Ind., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Feb. 29, 1984, Ser. No. 584,966
Int. Cl.³ H01C *1/012*
U.S. Cl. 338—309 **9 Claims**

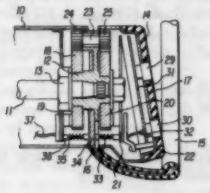


1. The improvement in a thin film bar resistor comprising an insulative substrate and thin fiim elements thereon of which the latter comprise: first and second longitudinally-spaced, transversely-extending conductive resistor terminals, a rectangular resistance body between said terminals and spaced therefrom by guard margins, said body having lower and upper layers of a valve metal which are, respectively, unanodized and anodized, first and second strip regions of said unanodized metal deposited in said margins to connect said first and said second terminals with longitudinally opposite ends of said body, and first and second conductive leads connected to respectively, said first and second terminals; said improvement comprising: a first conductive circuit path provided by said first lead and disposed on said substrate to be spaced outward, in a first of the two transverse directions, from a first portion of said body which is adjacent to said first terminal and is on a first of the transversely opposite sides of said body, and a first supplemental thin film region of said unanodized metal deposited on said substrate in integrally joined relation with such portion and with a length of said path to form on said substrate a first electrical bridge extending between such portion and such length and providing a current shunt around said first terminal and said first strip region.

4,485,371
STEERING WHEEL SYSTEM

Takahiro Yamada, Tokyo, and Teiji Okuyama, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 14, 1982, Ser. No. 368,141
Claims priority, application Japan, Apr. 14, 1981, 56-55808
Int. Cl.³ B60Q *1/42*; B62D *3/00*
U.S. Cl. 340—52 R 10 Claims



1. A steering wheel system including a steering wheel which is secured to a steering shaft, steering the wheels of a vehicle, said system comprising:

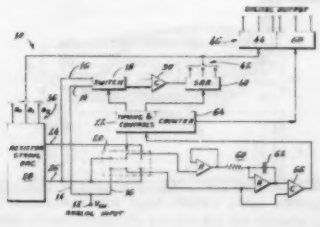
a buffer pad rotatably supported on one end of said steering shaft, within said steering wheel;

a differential gear reduction mechanism comprising a first exterior gear relatively rotatably supported on said steering shaft and secured to the body of said vehicle, a second exterior gear relatively rotatably supported on said one end of said steering shaft and secured to said buffer pad, a pinion shaft relatively rotatably supported on said steering shaft, a first pinion secured to said pinion shaft and engaged with said first exterior gear, and a second pinion secured to said pinion shaft and engaged with said second exterior gear and wherein said steering wheel is secured to said shaft between said first exterior gear and said second exterior gear, whereby the rotation of said buffer pad is reduced in comparison with the rotation of said steering wheel.

4,485,372
TWO-STAGE A-TO-D CONVERTER

Peter R. Holloway, Andover, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Filed Oct. 9, 1981, Ser. No. 310,120
Int. Cl.³ H03K *13/02, 13/08, 13/20*
U.S. Cl. 340—347 AD 1 Claim



1. An anolog-to-digital converter including first and second stages which are operable sequentially to produce, respectively, a first set of higher-order bits and a second set of lower-order bits together constituting a digital output signal corresponding to an anolog input signal, comprising:

(A) a resistor-string segment-type d-to-a converter forming part of said first stage and operable in response to a digital input signal to produce on an output line any one of a group of discrete, progressively differing analog signal levels as developed at the nodes connecting the common ends of the resistors of said resistor string;

the resistors of said string having values which are nominally equal, but which actually vary somewhat due to manufacturing tolerances so that the voltages across the resistors also are correspondingly unequal;

control circuit means responsive both to said analog input signal and the analog signal level on said output line, said control circuit means being operable in a first phase of an analog-to-digital conversion operation to compare said analog input signal and said output line signal level and to develop a digital input signal for said d-to-a converter setting said output line signal at one of said levels which is next to the value of said analog input signal, said digital input signal serving as said first set of higherorder bits;

said first stage further including means to produce a reference signal representing the difference between (i) said analog output signal from one of said resistor-string nodes and (ii) the next one of said discrete analog signal levels from the node next adjacent said one node and which together with said analog output signal brackets the value of said analog input signal;

the magnitude of said difference signal depending upon the selected pair of nodes from which it is derived, due to said variation in resistor voltage resulting from said manufacturing tolerances; and (B) an a-to-d converter of the multi-slope integrating type forming part of said second stage and including analog input terminal means and referance signal terminal means;

said control circuit means serving in a second phase of the analog-to-digital conversion operation to direct to said input terminal means a signal corresponding to the difference between (a) said analog input signal and (b) one of said two discrete analog signal levels which together define said difference signal and to direct said difference signal to said reference terminal means, said control circuit means further serving in said second phase to operate said integrating-type a-to-d converter to develop said set of lower-order bits providing an interpolation of said analog input signal between said analog output signal and the next one of said discrete analog signal levels which together define said difference signal;

said control circuit means further including means to operate said multi-slope converter with said analog input signal and said difference signal being integrated in predetermined sequence to provide that at least one integration time, as represented by clock pulses, affords a numeric measure of said interpolation of said analog input signal between said two levels for developing said lower-order bits.

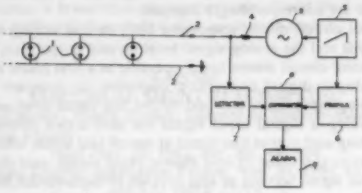
4,485,373
AUTOMATIC SECURITY MONITORING SYSTEM

Martin T. Cole, Keysborough, Australia, assignor to I. E. I (Australia) Proprietary Limited, Huntingdale, Australia

Continuation of Ser. No. 216,641, Dec. 15, 1980, abandoned.
This application Nov. 17, 1982, Ser. No. 442,372
Claims priority, application Australia, Dec. 13, 1979, PE1708
Int. Cl.³ G08B *19/00*
U.S. Cl. 340—522 2 Claims

1. An automatic centralized monitoring security system comprising a plurality of detectors each capable of detecting and advising the status in any given malfunction situation such as incidence of fire, burglary, hold up, equipment malfunction, or a process failure of either a routine or emergency nature, a timing device associated with each detector, means providing a synchronizing time base, said timing device being adapted to transmit electrical pulses at infinitely variable preset times relative to said synchronizing time base when in use to create an infinitely variable time based circuit profile which in normal operation is in dynamic equilibrium such that the system can adapt to slight changes in the circuit profile caused by ambient temperature based variations or component characteristic

variations without giving rise to an alarm situation, the arrangement being such that upon said malfunction situation occurring to change said infinitely variable time based circuit



profile, an imbalance in the equilibrium of said time based profile is created which imbalance gives rise to an alarm situation in the system.

4,485,374

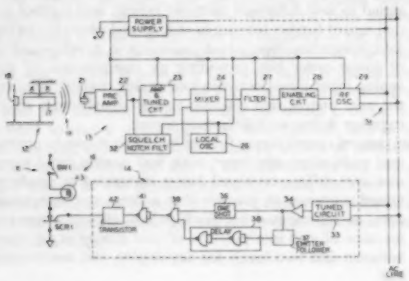
NON-WIRED PERIMETER PROTECTIVE SYSTEM

Francis P. Meserow, 2605 W. Armitage Ave., Chicago, Ill. 60647, and Frank H. Mills, Chicago, Ill., assignors to Francis P. Meserow, Chicago, Ill.

Continuation-in-part of Ser. No. 159,511, Jun. 16, 1980, abandoned. This application Feb. 15, 1983, Ser. No. 466,482

Int. Cl.³ G08B *13/08*

U.S. Cl. 340—541 **11 Claims**



1. A non-wired perimeter alarm system of the type that uses the opening of an entryway such as a door or window to institute an alarm at a location removed from the entryway, comprising:

a transducer module capable of being installed at an entryway and including means for generating a supersonic acoustic signal at a first predetermined frequency above the range of human hearing by striking a solid body a single blow to set up undampened vibrations in response to the opening of the entryway, said transducer using the mechanical force resulting from the act of opening the entryway both to trigger said supersonic acoustic signal and to power the transducer's production of said signal; and

a local receiver capable of receiving said supersonic acoustic signal of said first predetermined frequency at a location removed from the transducer and for producing an alarm-activating electrical signal in response thereto;

whereby the transducer may be positioned at said entryway of a building, and the local receiver positioned in the interior thereof to raise alarm in response to the transducer's supersonic acoustic signal.

4,485,375

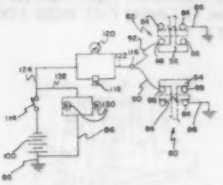
GRIP-RESPONSIVE DOZING DRIVER ALARM

Vilas D. Hershberger, R.R. #1, Hesston, Kans. 67062

Filed Sep. 29, 1982, Ser. No. 426,683

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—576 **4 Claims**



1. A driver alarm system for a vehicle having a steering wheel rim, said system comprising:

a hand-grippable body;

means for attaching said body to the steering wheel rim at a location to be gripped by the hand of the driver applied to the rim for normal steering of the vehicle;

a pair of push buttons on said body projecting therefrom in generally opposite directions at locations to be depressed when said body is gripped by the hand of the driver of the vehicle for steering;

means for urging each push button to an extended position, said urging means yielding to permit movement of each push button to a depressed position when said body is gripped by the hand of the driver of the vehicle;

a normally completed electric circuit having a completed condition when either push button is in the extended position and an interrupted condition only when both push buttons are in the depressed condition; and

an alarm signalling device in said circuit energized to produce an alarm signal when said circuit is in the completed condition, whereby the alarm signal is produced whenever the driver of the vehicle fails to grip said body sufficiently to maintain both push buttons in the depressed condition.

4,485,376

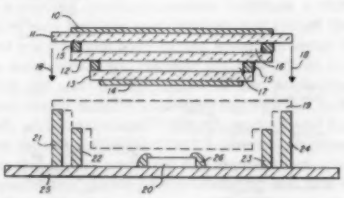
STACKED LIQUID CRYSTAL DISPLAY

Robert T. Noble, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 198,073, Oct. 17, 1980, abandoned. This application Jan. 14, 1983, Ser. No. 457,846

Int. Cl.³ G09G *3/36*

U.S. Cl. 340—716 **3 Claims**



1. A stacked display comprising:

an upper transparent member;

a center transparent member disposed below and parallel to the upper transparent member;

a first level of liquid crystal material disposed between the upper and center transparent members;

a lower transparent member disposed below and parallel to the center transparent member;

a second level of liquid crystal material disposed between the center and lower transparent members;

sealing means disposed between the transparent members at the edges of each level for retaining the liquid crystal material within the respective levels;

first and second sets of segment electrodes disposed in predetermined patterns on the top surface of the center transparent member;

first conductive means disposed on the bottom surface of the upper transparent member in vertical juxtaposition with the first set of segment electrodes;

second conductive means disposed on the bottom surface of the upper transparent member in vertical juxtaposition with the second set of segment electrodes;

third and fourth sets of segment electrodes disposed in predetermined patterns on the bottom surface of the center transparent member;

third conductive means disosed on the top surface of the lower transparent member in vertical juxtaposition with the third set of segment electrodes;

fourth conductive means disposed on the top surface of the lower transparent member in vertical juxtaposition with the fourth set of segment electrodes;

a plurality of bus lines, each bus line being connected to one segment electrode in each of the four sets;

drive means connected to each of the four conductive means for selectively applying first or second signals to the respective conductive means, wherein the first signal enables the liquid crystal material disposed between the respective conductive means and the corresponding segment electrodes to be altered from a transparent state to an opaque state whenever selected segment electrodes are energized in response to an energizing signal applied to the respective bus lines, and wherein the second signal maintains the liquid crystal material disposed between the respective conductive means and the corresponding segment electrodes in a transparent state despite the application of the energizing signal to the respective bus lines.

4,485,377

LED DISPLAYS WITH HIGH INFORMATION CONTENT

Günter Claus; Klaus Illgner, and Helmut Jacques, all of Berlin, German Democratic Rep., assignors to VEB Werk für Fernsehelektronik im VEB Kombinat Mikroelektronik, Berlin-Oberschöneweide, German Democratic Rep.

Filed Aug. 4, 1982, Ser. No. 405,111

Claims priority, application German Democratic Rep., Aug. 12, 1981, 2325640

Int. Cl.³ G09G *3/32*

U.S. Cl. 340—719 **15 Claims**

1. In an LED display with high information content, comprised of semi-conductor light emitter chips arranged at the cross-points of two mutually perpendicular systems of parallel conducting paths; the improvement wherein said display is comprised of a support component in the form of a planar substrate of plastic material with a high reflection factor, said substrate having recesses for receiving said semi-conductor chips, said recesses serving as light conducting tunnels, said substrate having at least one conducting path plane for the control of semi-conductor chips, one side of said substrate being connected via conducting or non-conducting adhesives to a flexible conducting plate which carries said semi-conductor chips, the other side of said substrate being connected to a self-adhering diffusion film, said substrate comprising the sole support element of said display.

4,485,378

DISPLAY CONTROL APPARATUS

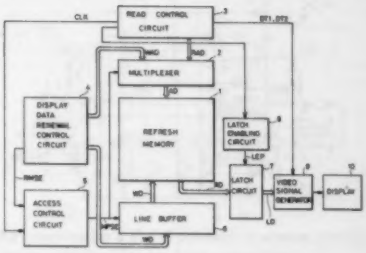
Kenji Matsui, Nagaokakyo, and Masakatu Watanabe, Kyoto, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Dec. 10, 1981, Ser. No. 329,506

Claims priority, application Japan, Dec. 11, 1980, 55-175391

Int. Cl.³ G09G *1/02*

U.S. Cl. 340—750 **10 Claims**



1. A display control apparatus for controlling operation of a display including a relatively large number of picture elements arranged both in vertical and horizontal directions and displaying a minimum unit of display data having a relatively small number of picture elements both in the vertical and horizontal directions, said display control apparatus comprising:

display data storage means for storing a plurality of said minimum units of display data to be displayed by said display,

means for generating read address data for designating addresses of data to be read from the data stored in said display data storage means,

means for generating write address data for designating addresses for writing in said display data storage means the display data of said minimum units of display data,

means for periodically generating a signal representing a minimum unit period, said minimum unit period being representative of a time required for one of said minimum units of display data to be displayed by said display,

means responsive to said minimum unit period representing signal for generating a latch enabling signal in a latch period within said minimum unit period and having a predetermined phase relative to said minimum unit period representing signal,

write data supply means for supplying said minimum units of display data,

writing means responsive to said write data for writing the same into said display data storage means as addressed by said write address data in a writing period contained within said minimum unit period but excluding the latch period such that said writing period and said latch period do not overlap, and

latch means responsive to said latch enabling signal for latching said minimum units of display data read from said display data storage means as addressed by said read address data and for supplying said display with said minimum units of display data.

4,485,379

CIRCUIT AND METHOD FOR DRIVING A THIN-FILM EL PANEL

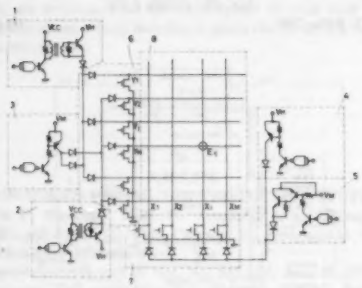
Hiroshi Kinoshita, Tenri; Toshihiro Ohba; Masashi Kawaguchi, both of Nara; Yoshiharu Kanatani, Tenri, and Hisashi Uede, Wakayama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 10, 1982, Ser. No. 347,421

Claims priority, application Japan, Feb. 17, 1981, 56-22644; Feb. 18, 1981, 56-23312

Int. Cl.³ G09G 3/30

U.S. Cl. 340—781 4 Claims



1. A display device comprising:

an El panel including an electroluminescent layer, an array of scan electrodes, an array of data electrodes crossing the scan electrodes and a plurality of pixels each lying sandwiched between a respective one of the scan electrodes and a respective one of the data electrodes;

means for sequentially applying a write pulse voltage to the scan electrodes in a line scanning fashion;

means for applying a refresh pulse voltage of a polarity opposite said write pulse voltage to the entire said panel upon completion of each single scan by said means for applying a write voltage pulse;

means for applying to the entire said panel upon each application of a said write pulse to all said pixels a write compensation pulse of the same polarity as said refresh pulse voltage and of an amplitude insufficient to cause electroluminescence, and for applying a refresh compensation pulse of a polarity opposite to said refresh pulse voltage and of an amplitude insufficient to cause electroluminescence;

the durations of said write compensation pulse and said refresh compensation pulse having a difference (Δt) defined by:

$$\Delta t=(1/k)\ln[\beta(R)/\beta(W)]$$

where k is a constant, and

$$\beta=g^k/C_E$$

where g and k are constants and C_E is the capacitance of the electroluminescent layer, β[R] and β(W) being the values of β for the refresh and write pulses respectively.

4,485,380

LIQUID CRYSTAL MATRIX DISPLAY DEVICE

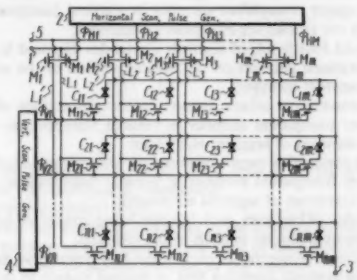
Mitsuo Soneda, Zama; Takaji Ohtsu, Hatano, and Ken Kutaragi, Kawasaki, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 8, 1982, Ser. No. 386,432

Claims priority, application Japan, Jun. 11, 1981, 56-90053

Int. Cl.³ G09G 3/36

U.S. Cl. 340—784 7 Claims



1. A liquid crystal matrix display device comprising a plurality of liquid crystal display elements arranged in a matrix pattern with rows of said display elements extending in an X-axis direction and with columns thereof extending in a Y-axis direction; a plurality of horizontal transmitting lines each extending in the X-axis direction and coupled to a respective one of said rows of said liquid crystal display elements; a plurality of vertical transmitting lines each coupled to a respective one of said columns of said liquid crystal display elements wherein a parasitic capacitance exists between said vertical transmitting lines and the liquid crystal display elements in the respective columns of such display elements associated with such vertical transmitting lines; means for sequentially applying a signal voltage to the vertical transmitting lines; means for sequentially applying a switching voltage to the horizontal transmitting lines; auxiliary signal lines provided in said Y-axis direction parallel to respective ones of said vertical transmitting lines and having a predetermined compensating capacitance with respect to the liquid crystal display elements in an associated column thereof; and signal generator means sequentially supplying an inverted version of said signal voltage as a compensation voltage to said auxiliary signal lines to cancel any crosstalk caused by the parasitic capacitance between the vertical transmitting lines and the liquid crystal display elements other than those in a row thereof to whose horizontal transmitting line the switch voltage is applied.

4,485,381

CODED ELECTRONIC LOCKING DEVICES

Jacques Lewiner, 5, rue Bory d'Arnex, 92210 Saint-Cloud; Claude Hennion, 18, rue Flatters, 75005 Paris, and Gilbert Berthier, 17, Avenue de Madrid, 92200 Neuilly, all of France

Filed Jun. 4, 1982, Ser. No. 385,103

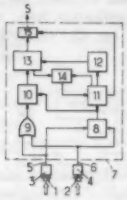
Claims priority, application France, Jun. 4, 1981, 81 11102

Int. Cl.³ E05B 47/00

U.S. Cl. 340—825.31 9 Claims

1. Coded electronic locking device for which the unlocking order requires the formation of a sequence of electrical pulses whose composition corresponds to at least one predetermined "reference" code previously memorized in the device, said device comprising two pushbuttons activated by axially exerted pressure thereon and each of said pulses being generated by the thrust of a finger of a user knowing the code on one or the other of said two push-buttons, said device further comprising means associated with said two buttons for converting their respective actuations into electrical pulses transmitted

respectively in two parallel channels and an electronic decoding unit for receiving and producing an unlocking signal when the composition of the sequence of these pulses corresponds to the reference code, said electronic unit being arranged so as to identify in turn the different pulse trains generated successively in the two channels by each sequence of actual actuations of the two buttons, to count the number of pulses comprised by each of the different so-identified trains, to compare for decoding purposes the complete composition of each real sequence



of pulses so analyzed with the complete sequence composition corresponding to the previously memorized reference code, and to produce the unlocking signal each time that the comparison reveals an identity between the real sequence and the code sequence, said unit including in addition zero re-set means for resetting the unit to zero, and said unit being arranged so that after each re-setting thereof to zero, the sequence of real actuations of the two buttons for unlocking the device can be carried out by commencing by pressing either one of the two buttons.

4,485,382

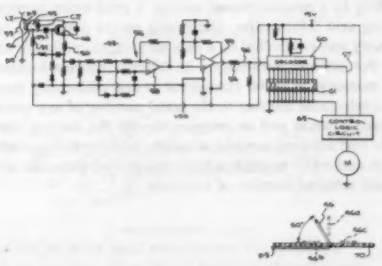
TUNING CIRCUITS WITH BENDABLE U-SHAPED VARIABLE INDUCTOR FOR GARAGE DOOR ACTUATORS

Charles C. Moore, #8 Elmwood St., Irvine, Calif. 92714

Filed Jul. 8, 1982, Ser. No. 396,163

Int. Cl.³ H04Q 9/14

U.S. Cl. 340—825.69 **5 Claims**



5. In a remote control system for a garage door actuator including an oscillatory circuit in the transmitter unit for controlling the frequency of oscillation of a carrier signal modulated by a binary coded pulse train and an oscillatory circuit in the receiver unit for controlling the frequency of oscillation thereof so that it can receive the modulated carrier signal, each said oscillatory circuit including a closed loop circuit comprising:

an insulating board;

a pair of laterally spaced printed-circuit conductive paths formed on the surface of said insulating board;

a fixed capacitor having its terminals respectively soldered to one of the ends of said conductive paths;

a generally U-shaped conductive wire extending crosswise to said conductive paths with the terminals of its legs respectively soldered to the opposite ends of said conductive paths;

said pair of conductive paths and said U-shaped conductive wire forming a variable inductor in parallel with said fixed capacitor; and

said U-shaped conductive wire being bendable about its terminals so as to vary the angular position of the legs thereof relative to said conductive paths so as to vary the inductance of said inductor and thereby the operating frequency of said oscillatory circuit.

4,485,383

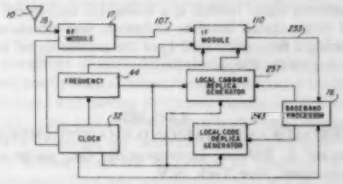
GLOBAL POSITION SYSTEM (GPS) MULTIPLEXED RECEIVER

Robert A. Maher, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 1, 1980, Ser. No. 211,500

Int. Cl.³ H04B 7/185

U.S. Cl. 343—352 **6 Claims**



1. An RF receiver for a global positioning system capable of multiple space vehicle (SV) tracking comprising:

(a) an RF energy receiver for receiving coded high/low frequencies (L_1, L_2) from a plurality of SVs, each SV transmitting the L_1, L_2 signals on a code identifying the transmitting SV;

(b) a switching means for alternately switching the RF receiver between the coded L_1, L_2 signals for detetion and downconversion to baseband;

(c) a digital processing means,

(d) replica code and L_1, L_2 signal producing hardware; and

(e) a coherent time and frequency synthesis means connected to the RF receiver, replica code and L_1, L_2 signal producing hardware means and digital processing means, said digital processing means operatively connected to the RF receiver and replica coded and L_1, L_2 signal producing hardware means for producing RF receiver replica code L_1, L_2 signals for each SV to be tracked, and adjusting with respect to the coherent time and frequency synthesis circuit the states of the hardware replica receiver signals to align them with corresponding signals of each of the SVs at a rate that supports sampled data closed-loop tracking of the SVs without reacquisition of each SV being tracked.

4,485,384

MICROWAVE SYSTEM

Frank R. Connor, Flat 3, 10 Avenue Rd., London SE25 4EA, England

Filed Apr. 6, 1981, Ser. No. 251,266

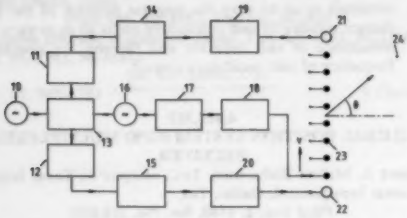
Claims priority, application United Kingdom, Mar. 5, 1981, 8106877

Int. Cl.³ G01S 1/44

U.S. Cl. 343—405 **8 Claims**

1. A double sideband Doppler system comprising an arrangement for transmitting two reference signals continuously at different constant reference frequencies from two non-commutated reference radiators which are spaced more than 15λ apart, where λ is the wavelength of either reference signal and are positioned one at either end of a set of suitably spaced commutated baseline radiators whose total baselength is at

least 15λ, said non-commutated reference radiators being separate from and additional to the set of commutated baseline radiators, and means are provided for transmitting a carrier signal continuously at a third frequency from any one of the set of commutated baseline radiators, said carrier signal being



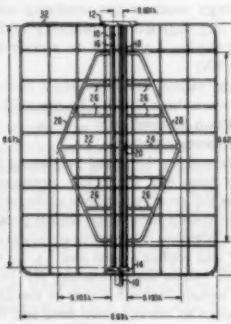
commutated during transmission by energising the set of commutated baseline radiators one at a time in succession, to simulate uniform linear motion in a to-and-fro movement along the set of commutated baseline radiators, said simulated motion producing a frequency shift f_d of the carrier signal at a distant point due to the Doppler effect.

4,485,385

BROADBAND DIAMOND-SHAPED ANTENNA

Margarete A. Ralston, Lawrenceville, Ga., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 15, 1982, Ser. No. 388,688
Int. Cl.³ H01Q *9/28*
U.S. Cl. 343—795 **8 Claims**



1. An antenna, comprising:

planar reflector means;

first and second straight elongated conductive support members spaced from and parallel to said planar reflector means, said first and second support members being mutually parallel;

support member shorting means coupled to said first and second support members for conductively coupling said first and second support members together at first and second locations along said support members;

first and second generally planar conductive dipole elements conductively coupled to and supported by said first and second support members, respectively, at a location centered between said shorting means, each of said first and second planar dipole elements being substantially parallel with said planar reflector means and extending perpendicularly from said support members by distances measured perpendicularly from said support members which are a maximum at a location half-way between said first and second shorting means and which distances are less at locations removed from said half-way location; and

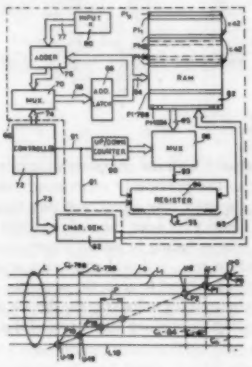
feed means electrically coupled to said first and second support members at said location half-way between said first and second shorting means.

4,485,386

INK JET DOT PRINTER

Giandomenico Dagna, Ivrea; Enrico Manini, Camandona, and Giorgio Tadini, Turin, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Jul. 13, 1982, Ser. No. 397,770
Claims priority, application Italy, Aug. 4, 1981, 68093 A/81
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **20 Claims**



8. Driving circuit for an on demand ink jet printer having a plurality of ink ejecting tubes mounted on a movable carriage and arranged in a plane inclined with respect to the movement of the carriage, each tube having a nozzle and a transducer to expell an ink droplet, said circuit comprising a character generator to generate character information representative of the character to be printed arranged in dot column patterns according to a predetermined matrix, a read-write memory for storing said information, addressing means connected to said memory and controlled by a control unit, to cyclically address said dot column information in selected address locations of said memory, an adder connected to said addressing means to add a selectable number to the serial number of any preceding address location and an entering device for forcing into said adder said selected number, whereby said dot column information is addressed at address locations shifted from one another by said selected number of locations.

4,485,387

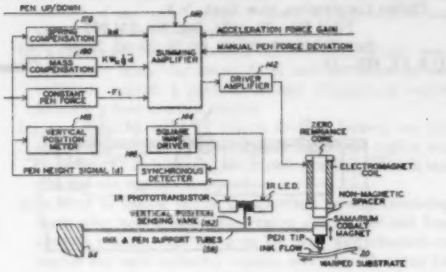
INKING SYSTEM FOR PRODUCING CIRCUIT PATTERNS

Carl E. Drumheller, Pittsford, N.Y., assignor to Microscience Systems Corp., Pittsford, N.Y.

Filed Oct. 26, 1982, Ser. No. 436,862
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—140 R **36 Claims**

1. For use in producing patterns on a substrate with viscous material and with the aid of flexurally supported member having an orifice, a system comprising means for moving said substrate with respect to said member, means for controllably feeding said viscous material through said orifice at a volume rate synchronous with the rate of relative movement of said member and substrate, and means coupled to said member and responsive to the viscous forces on the viscous material flow-

ing from said orifice upon said substrate for allowing said viscous forces to determine the vertical displacement of said



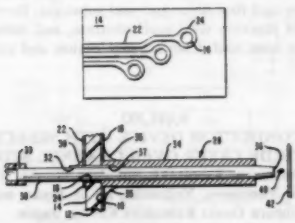
member to maintain a constant thickness of line of said material in said pattern for a given cross-sectional area of said line.

4,485,388

COMPACT PRINT HEAD

Steven P. Sayko, Dryden, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Jul. 21, 1982, Ser. No. 400,543
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **12 Claims**



1. An ink jet print head arrangement comprising a substrate having a plurality of apertures therethrough,

conductive material on one surface of the substrate and commonly associated with the apertures in a manner surrounding thereof,

conductive material on the opposite surface of the substrate and individually associated with the apertures, and an

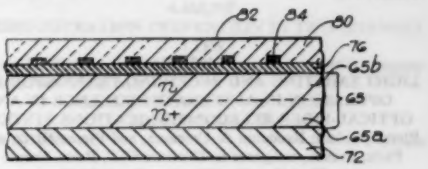
ink droplet ejection member carried by the substrate and actuated in pulse manner through the conductive material for printing operation, said ejection member having an elongated ink supply portion extending through one of said apertures, a piezoelectric element surrounding said portion on one side of the substrate, and connection means secured to said portion and to said element and extending through said one of said apertures, said member being operably associated with the conductive material on both sides of the substrate.

4,485,389

AMORPHOUS SEMICONDUCTORS EQUIVALENT TO CRYSTALLINE SEMICONDUCTORS

Stanford R. Ovshinsky, Bloomfield Hills, and Masatsugu Izu, Birmingham, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation of Ser. No. 193,072, Oct. 2, 1980, abandoned, which is a continuation-in-part of Ser. No. 104,285, Dec. 17, 1979, abandoned, which is a division of Ser. No. 884,664, Mar. 8, 1978, Pat. No. 4,217,374. This application Sep. 29, 1982, Ser. No. 428,092
Int. Cl.³ H01L *45/00*
U.S. Cl. 357—2 **123 Claims**



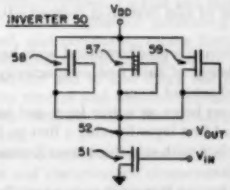
1. An amorphous semiconductor body comprising a solid compensated amorphous semiconductor host matrix having at least one element and having electronic configurations which have an energy gap, said semiconductor body being formed by forming on a substrate an amorphous semiconductor host matrix body formed from the deposition of materials in substantially elemental form and introducing therein a plurality of different and complementary compensating materials comprising at least fluorine and excluding hydrogen, each of which reduces the density of certain localized defect states in the energy gap so that the combination of said different and compensating materials produces a greater reduction in the density of localized defect states in the energy gap than any one of the same could achieve.

4,485,390

NARROW CHANNEL FET

Robert K. Jones, Centerville, and Armand J. van Velthoven, West Carrollton, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Division of Ser. No. 890,425, Mar. 27, 1978, Pat. No. 4,212,688. This application Oct. 1, 1979, Ser. No. 80,823
Int. Cl.³ H01L *29/78*
U.S. Cl. 357—23 **5 Claims**



3. An improved channel structure for an insulated gate field effect device in which the channel region is formed in a semiconductor material, includes a gate electrode in priximity thereto, and is defined to extend longitudinally, wherein the improvement comprises:

a first, longitudinal section of said channel region, lying substantially centered within said channel region and doped to a first impurity concentration;

a second, longitudinal section of said channel region, significantly narrower than said first section, lying between said first longitudinal section and one side of said channel

region, said second longitudinal section being doped to a second impurity concentration;

said first and said second impurity concentrations being characterized in that said second longitudinal section forms a depletion mode channel, and said first longitudinal section forms an enhancement mode channel; and

means for biasing the gate electrode such that said first longitudinal section is never inverted.

4,485,391

LIGHT EMITTING AND RECEIVING TRANSISTOR FOR OPERATION IN ALTERNATE SEQUENCE IN AN OPTICAL-FIBER TELECOMMUNICATIONS SYSTEMS

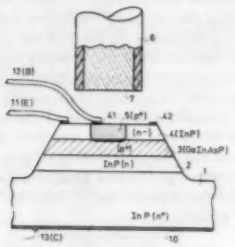
Pierre Poulain; Baudouin de Cremoux, and Pierre Hirtz, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Oct. 28, 1981, Ser. No. 315,862

Claims priority, application France, Oct. 28, 1980, 80 23015

Int. Cl.³ H01L *29/161, 31/12, 27/14, 27/02*

U.S. Cl. 357—19 **6 Claims**



1. A light emitting and receiving transistor comprising:

a semiconductor substrate and plural semiconductor layers formed in series on said substrate, including,

a first layer farthest away from said substrate adapted to be coupled to an entrance face or an exit face of an optical fiber, said first layer having a predetermined wide bandgap composition and being of a first conductivity type,

a second layer having a predetermined narrow bandgap composition and being of a second conductivity type opposite that of said first layer formed adjacent said first layer, and

a third layer having a predetermined wide bandgap composition and being of said first conductivity type formed adjacent said second layer;

said second layer being an active layer and having an interface with said first layer forming a first pn heterojunction and an interface with said third layer forming a second pn heterojunction;

said first layer having formed in only a part thereof a heavily doped region of the second conductivity type extending through said first layer to said second layer;

wherein said substrate and said layers form a transistor having base, emitter and collector functions, the transistor base function being performed by said active layer while the emitter function is performed by the first layer and the collector function is performed by said substrate, said active layer, said third layer and said second heterojunction forming a light emission region; and

base, emitter, and collector electrodes respectively connected to said heavily doped region formed in said first layer, said first layer, and said substrate.

4,485,392

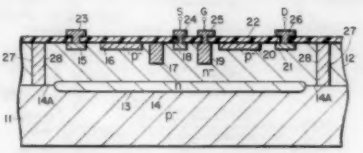
LATERAL JUNCTION FIELD EFFECT TRANSISTOR DEVICE

Barry M. Singer, New York, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Dec. 28, 1981, Ser. No. 334,997

Int. Cl.³ H01L *29/80, 29/78, 29/90, 29/40*

U.S. Cl. 357—22 **3 Claims**



1. A lateral JFET device, which comprises:

a semiconductor substrate of a first conductivity type and having a relatively light doping level;

a first semiconductor layer of a second conductivity type opposite to that of the first on said substrate and having a relatively light doping level;

source, gate, and drain contact regions located at the surface of said first semiconductor layer, the gate region being of the first conductivity type, more heavily doped than said substrate, and located between the source and the drain contact regions, which latter regions are of the second conductivity type and more heavily doped than said first layer;

means for electrically isolating the lateral JFET device from adjacent portions of said first semiconductor layer;

a surface semiconductor layer of said first conductivity type located at the surface of said first layer and between said gate and said drain contact regions, said surface layer having a doping level on the same order of magnitude as that of said substrate; and

a buried semiconductor layer of said second conductivity type and having a doping level greater than that of said first semiconductor layer, said buried layer being located between said first layer and said substrate, forming a p-n isolation junction with said substrate, and extending beneath at least said drain contact region and said surface layer.

4,485,393

SEMICONDUCTOR DEVICE WITH SELECTIVE NITRIDE LAYER OVER CHANNEL STOP

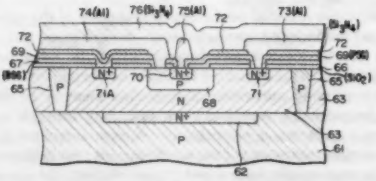
Kuniaki Kumamaru, Kawasaki; Shunichi Hiraki, Yokohama, and Toshio Yonezawa, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 038,284, May 11, 1979, abandoned. This application May 26, 1981, Ser. No. 267,420

Claims priority, application Japan, May 16, 1978, 53-57099

Int. Cl.³ H01L *29/34*

U.S. Cl. 357—52 **6 Claims**



1. A lateral semiconductor device comprising:

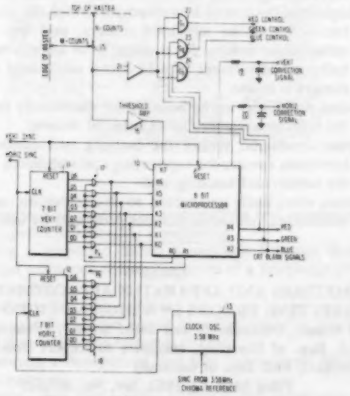
(a) a semiconductor body of N conductivity type;
(b) an emitter region of P conductivity type formed in the surface of said semiconductor body;
(c) a collector region of P conductivity type formed in the surface of said semiconductor body, separated from and surrounding said emitter region;
(d) a channel-cut region formed in the surface of said semiconductor body, separated from and surrounding said collector region; a portion of said channel-cut region forming a base contact region;
(e) an insulating layer of silicon dioxide formed on said semiconductor body to cover said channel-cut region, and to cover the area of said semiconductor body which said channel-cut regions surrounds;
(f) a layer of silicon nitride film formed on said insulating layer over said channel-cut region except for said base contact region, over the area between said channel-cut region and said collector region, and over the area between said collector region and said emitter region, but not over said collector, emitter, or base contact regions; and
(g) electrode means positioned on said layers and selectively passing through said layers for electrically contacting said base contact, emitter, and collector regions; and said silicon nitride film beneath said electrode means being of sufficient thickness to prevent positive charge build-up in the surface of said semiconductor body.

4,485,394

AUTOMATIC CONVERGENCE AND GRAY SCALE CORRECTION FOR TELEVISION RECEIVERS AND PROJECTION TELEVISION SYSTEMS

Sanjar Ghaem-Maghami, Chesapeake, and Howard E. Holshouser, Suffolk, both of Va., assignors to General Electric Company, Portsmouth, Va.

Filed Sep. 27, 1982, Ser. No. 423,906
Int. Cl.³ H04N *9/62*
U.S. Cl. 358—10 **12 Claims**



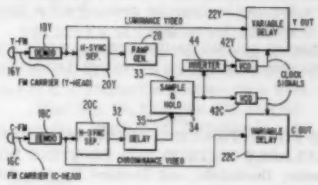
1. A system operative during normal viewing for the automatic correction of convergence and gray scale in color television receivers employing three cathode ray beams comprising:
at least one light sensor permanently positioned to detect a spot of light from a predetermined location on the display surface of said color television receiver;
means for blanking a different two of the three cathode ray beams on successive scans of the display surface in the vicinity of said light sensor;
processing means connected to receive the output of said light sensor for producing the timing characteristics indicative of the time required for the scan of the non-blanked cathode ray beam to reach said predetermined location of the light sensor;
first comparing means connected to said processing means for comparing the timing characteristics of the light sensor output for each said successive scan with predetermined timing characteristics to develop position error signals for each of said cathode ray beams; and
first correction means responsive to said position error signals for developing vertical and horizontal correction signals to correct the convergence of each of said three cathode ray beams.

4,485,395

MISREGISTRATION PREVENTION IN TWO CHANNEL VTRS

Henry R. Warren, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 21, 1982, Ser. No. 420,831
Int. Cl.³ H04N *5/93*
U.S. Cl. 358—17 **6 Claims**



1. Apparatus for synchronizing luminance and chrominance components of a television signal transmitted over separate channels, each of said components comprising a reference signal, said apparatus comprising:
separating means for separating said reference signal contained within each of said luminance and chrominance components;
comparing means coupled to said separating means for phase comparing the separated reference signals to produce a phase error voltage, said comparing means comprising a ramp generator having an input terminal coupled to said separating means for receiving separated reference signal therefrom for resetting said ramp in response to one of said separated luminance reference signal and said separated chrominance reference signal, said comparing means further comprising a delay line having an input coupled to said separating means for receiving the other of said separated luminance reference signal and said separated chrominance reference signal for generating a delayed reference signal, said comparing means further comprising a sample-and-hold circuit having inputs coupled to said ramp generator and to said delay line for sampling said ramp at the time of said delayed reference signal and for holding the sampled value for providing a phase error voltage; and
delaying means coupled to receive said at least one of said luminance and chrominance components and coupled to said comparing means for synchronizing said luminance and chrominance components in response to said phase error voltage.

4,485,396

AUTOMATIC CHROMA FILTER

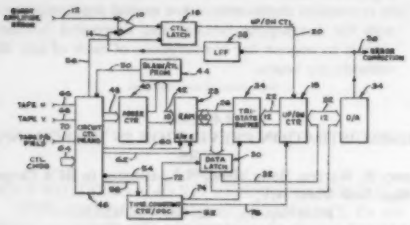
Edmund Sandberg, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Sep. 16, 1982, Ser. No. 418,903
Int. Cl.³ H04N *9/493, 9/535*
U.S. Cl. 358—27 **16 Claims**

1. A circuit for maintaining an average DC color burst value as an output signal comprising:

memory means for selectively storing color burst values from horizontal video lines and for supplying the values as the output signal;

comparator means for generating an up/down control signal indicative of the relative values of an incoming color burst and the output signal;



counter means responsive to the comparator means for updating the output signal towards the incoming color burst value and loading the updated color burst values back in memory means; and

control means coupled to the memory means and to the counter means for cycling the values therebetween.

4,485,397

METHOD FOR PRODUCING PRINTING FORMS WITH IRREGULARLY DISTRIBUTED PRINTING POINTS

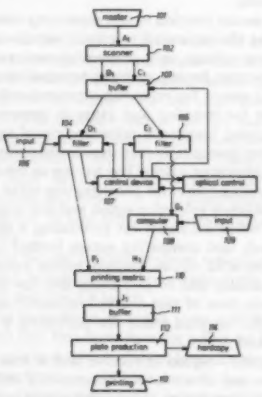
Karl Scheuter, Darmstadt, and Gerhard Fischer, Offenbach, both of Fed. Rep. of Germany, assignors to Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed Aug. 30, 1982, Ser. No. 413,216

Claims priority, application European Pat. Off., Sep. 12, 1981, 81 107207.3

Int. Cl.³ H04N *1/40*

U.S. Cl. 358—283 **5 Claims**



1. A method for producing printing forms using irregularly-distributed printing points, comprising the steps of:

opto-electrically scanning individual surface elements of a picture original at a desired resolution;

assigning a gray scale to each surface element and determining gradation values;

forming sub-surfaces of the surface elements which have at least approximately the same gradation value and in accordance with the actual boundaries of at least approximately the same gradation value of the original image; and

reproducing each sub-surface in accordance with its gradation value with a plurality of statistically-distributed printing points whose overall surface coverage corresponds to the gradation value of the respective sub-surface.

4,485,398

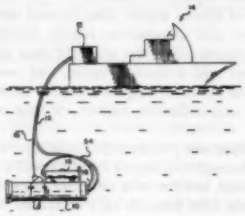
UNDERWATER CAMERA

Herbert D. Chapin, Jr., Fullerton, Calif.; Pierre J. Bonnescuelle de Lespinois, Port Washington, N.Y.; Alan H. Young, Plantation, and John Shelly, Greenacre City, both of Fla., assignors to Aquavision International Ltd., New York, N.Y.

Filed Nov. 27, 1981, Ser. No. 325,406

Int. Cl.³ H04N *9/09*

U.S. Cl. 358—50 **25 Claims**



1. An underwater camera comprising:

a television camera which is divisable into plural portions;

a housing configured so as to encase the television camera in close proximity to interior housing walls and to provide waterproof protection in underwater environments;

a plurality of sections in the housing which are removably connected together and which are arranged so that each housing section is associated with at least one of the portions of the camera so as to provide access to components within said camera;

a substantially transparent member positioned in the housing so as to permit passage of light from exterior camera surroundings to the television camera within said housing;

a high quality camera lens disposed within the housing and connected to the television camera, said lens having a substantially infinite focal range so as to require substantially no adjustment of said focus while said television camera is in use;

means positioned in the housing for electrically connecting the television camera to an external device;

means contained within the housing and contacting the television camera for supporting and stabilizing said camera within said housing; and

means electrically connected to the television camera for monitoring television pictures produced by said camera.

4,485,399

METHOD AND APPARATUS APPROXIMATELY CORRECTING ERRORS IN A DIGITAL VIDEO SIGNAL

Axel Schulz, Bickenbach, and Josef Sochor, Dieburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 12, 1982, Ser. No. 357,619

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1981, 3114275

Int. Cl.³ H04N *5/14, 5/21*

U.S. Cl. 358—36 **3 Claims**

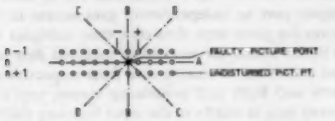
1. Method for concealing errors in a digital color television signal, in which faulty picture points are found by error detection methods and are replaced by information from neighboring picture points, said digital signal providing as input signals separately coded components of a color television signal, said method comprising the steps of:

subjecting each separately coded component to two successive delays of one television line and obtaining each of at least three successive picture point values at the beginning

and end of these delays and at the connection between said two successive delays, by means of shift registers;

setting to zero the value of every picture point found to be faulty by error detection methods;

processing every picture point in turn as a reference picture point by forming average values about the reference picture point from the non-faulty picture point values neighboring said reference picture point, said average values being respectively formed by values of points aligned vertically, horizontally and on both diagonals with respect to said reference picture point, respectively;



averaging said average values to provide a substitution value, and

substituting said substitution value for the value of the faulty picture point.

4,485,400

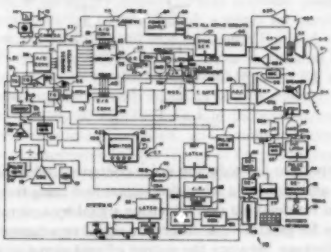
VIDEO TELEPHONE

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840, and Christian Grund, 707 L Eagle Heights, Madison, Wis. 53705

Continuation-in-part of Ser. No. 224,503, Jan. 13, 1981, abandoned. This application May 19, 1982, Ser. No. 379,963

Int. Cl.³ H04N *7/18*

U.S. Cl. 358—85 **4 Claims**



1. A method of generating, transmitting and receiving picture and speech information comprising:

effecting a telephone circuit connection between first and second telephone terminal circuits of a telephone switching system,

generating a first video signal,

storing said first video signal in a first memory located at said first telephone terminal circuit,

reproducing a first part of said first video signal from said first memory,

converting said first portion of said video signal to a form whereby it may be transmitted on the telephone circuit connecting said first and second terminal circuits and transmitting information defining said first portion of said video signal between said first and second terminal circuits,

receiving the transmitted signal at said second terminal circuit and converting same to digital form and recording such digital signals in a first portion of a second memory,

initiating speech communication between said telephone terminal circuits by speaking a first word into a microphone at said first telephone terminal circuit and converting the sound thereof to a first speech signal,

detecting said first speech signal and generating a first control signal and utilizing said first control signal to interrupt the reproduction of said video signal from said first memory,

electrically detecting when said first speech signal terminates and generating a second control signal and employing said second control signal to reinstitute reproduction of said video signal from said first memory, and

repeating said aforesaid procedure each time a speech signal is generated and detected on the output of said microphone until the complete video signal has been reproduced from said first memory to permit the entire video signal to be reproduced therefrom and recorded in said second memory, and

when said video signal is recorded in its entirety in said second memory, controlling the reproduction of said video signal and applying same in a manner to generate a full frame of visual video information on the viewing screen of a video monitor.

4,485,401

TELEVISION SYSTEM FOR HIGH-DEFINITION TELEVISION AND A TELEVISION TRANSMITTER AND RECEIVER SUITABLE THEREFORE

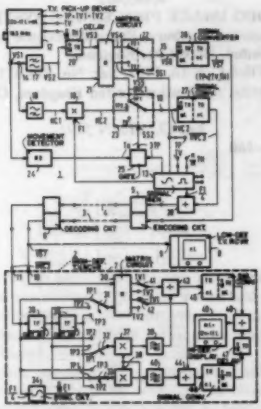
Sing L. Tan; Leendert J. van de Polder, both of Eindhoven, and Theodoor M. M. Kremers, Valkenswaard, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 10, 1982, Ser. No. 416,742

Claims priority, application Netherlands, Oct. 1, 1981, 8104476

Int. Cl.³ H04N *5/48, 5/38*

U.S. Cl. 358—141 **9 Claims**



1. A television system for high-definition television, the system comprising a transmitter incorporating a television pick-up arrangement for generating a high-definition video signal, a first and a second signal channel, each having a bandwidth in accordance with an existing television transmission standard, coupled to the pick-up arrangement and suitable for transmission or storage, respectively, of signal components of the high-definition video signal, the system also comprising a receiver incorporating at least one picture display device for high-definition display coupled to the two signal channels, the high-definition video signal generated in the transmitter and displayed in the receiver incorporating television line rasters containing on the order of a thousand lines and a highest video signal frequency of more than 10 MHz, characterized in that in the high-definition television system, which is further suitable for connection to at least one picture display device suitable for low-definition television transmission in accordance with said

existing television standard, in the transmitter, an output of the pick-up arrangement for applying the high-definition video signal is coupled to an input terminal of a signal splitter circuit having a first and a second output terminal for supplying a low-definition video signal and a contour signal, respectively, which contour signal on display shows details in the horizontal and vertical directions, the low-definition video signal and the contour signal together comprising in essence the information of the high-definition video signal, the first and the second output terminals, respectively, of the signal splitter circuit being coupled to an input of a first and a second signal converter circuit, respectively, the first signal converter circuit having an output for supplying an interlaced video signal of a low-definition compatible with said standard and which occurs picture-periodically, and the second signal converter circuit having an output for supplying a contour signal which occurs periodically over several picture periods, the outputs of the first and the second signal converter circuit, being respectively coupled to the first and the second signal channels provided in the system for high-definition television and, in the receiver, the picture display devices suitable for the high-definition television and the standardized low-definition television, respectively, include a first and a second input and a single input, respectively, for connection to the respective first and second signal channels and to the first signal channel which forms part of the standardized low-definition television system, the first and the second inputs of the high-definition picture display device being coupled to a high-definition picture display apparatus via a third and fourth signal converter circuit, respectively.

4,485,402

VIDEO IMAGE PROCESSING SYSTEM

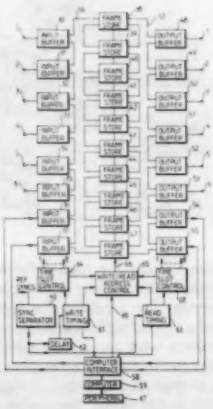
Anthony D. Searby, Newbury, England, assignor to Micro Consultants Limited, Berkshire, England

Filed Oct. 16, 1981, Ser. No. 311,821

Claims priority, application United Kingdom, Oct. 17, 1981, 8033536

Int. Cl.³ H04N *5/91*

U.S. Cl. 358—160 **36 Claims**



1. A video image processing system comprising:

a plurality of data input ports and at least one data output port;

a plurality of frame stores each capable of storing data equivalent to a frame of video information;

a common input highway for the frame stores and adapted to receive data for storage in the frame stores;

a common output highway for the frame stores and adapted to provide data from the frame stores to the at least one output port;

processing means adapted to have access to at least one of the common input and output highways respectively to effect processing of the data available therefrom;

control means for controlling the passage of the data to and from the common highways to allow the processing means, the data input ports, and the at least one data output port to independently gain access to the frame stores for given time slots on a time multiplex basis; and

data buffer means for assembling received data into blocks and connected to receive data from respective data input ports and from said processing means, and to pass received data in blocks to the input highway during respective time slots.

4,485,403

NOISE REDUCTION SYSTEM FOR TELEVISION SIGNALS

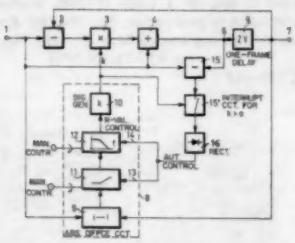
Gerhard Iiletschko, Darmstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 13, 1982, Ser. No. 377,611

Claims priority, application Fed. Rep. of Germany, May 30, 1981, 3121597

Int. Cl.³ H04N *5/21*

U.S. Cl. 358—167 **20 Claims**



1. Apparatus for reducing noise content of television signals having an input for a television signal and comprising:

means for delaying said television signal by a picture period;

means for producing a difference signal representative of the difference between the output of said signal delay means and said input television signal present at said input;

means including a controllable signal generator and a multiplier for producing a modified difference signal by multiplicatively reducing said difference signal by a correction factor k delivered as a signal by said signal generator;

means for adding together said input television signal and said modified difference signal and furnishing a resulting sum signal to said signal delay means;

means for determining the absolute difference between said input television signal and said output of said television signal delaying means, for producing a signal indicative of movement in the picture represented by said television signal;

means for applying a signal derived from said picture movement indicative signal to control said signal generator;

signal transmission means of variable transmission characteristic interposed between said means for producing said signal indicative of picture movement and said means for applying said movement indicative signal to said signal generator, for control of said correction factor, and

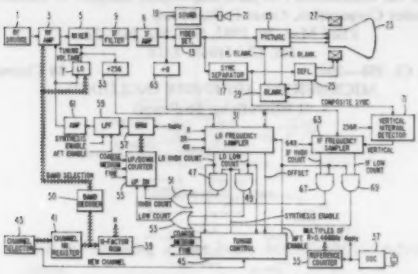
means responsive to the noise content of said input television signal for varying said transmission characteristic of said signal transmission means with reference to the noise content of said input television signal.

4,485,404

DIGITAL AFT SYSTEM WHICH IS ACTIVATED DURING VERTICAL RETRACE INTERVALS

Juri Tults, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 1, 1982, Ser. No. 413,769
Int. Cl.³ H04N 5/50
U.S. Cl. 358—195.1 11 Claims



1. Tuning control apparatus for a television system of the type including an input for RF television signals corresponding to respective channels, each RF signal having a picture carrier modulated with video information including picture information in picture intervals occurring between horizontal retrace intervals themselves occuring between vertical retrace intervals; and RF stage for selecting one of said RF signals corresponding to a selected channel in response to a tuning control signal; a local oscillator for generating a local oscillator (LO) signal having a frequency related to said selected channel in response to said tuning control signal; a mixer for combining said local oscillator signal and said selected RF signal to produce an IF signal having a picture carrier modulated in the same manner as the picture carrier of said selected RF signal; picture processing means responsive to said IF signal for producing a picture signal representing said picture information contained in said picture intervals; and synchronization processing means responsive to said IF signal for producing horizontal and vertical synchronization signals representing the occurrence of said horizontal and vertical retrace intervals, respectively; comprising:

tuning control signal generating means for generating said tuning control signal;

fine tuning control means coupled to said tuning control means and responsive to said IF signal, when enabled to do so, for controlling said tuning control signal so that said IF picture carrier has its nominal frequency; and

fine tuning enabling means coupled to said fine tuning control means and responsive to ones of synchronization signals for selectively enabling said fine tuning control means to respond to said IF signal during predetermined portions of respective ones of said retrace intervals.

4,485,405

INTEGRATION TIME CONTROL

Theodore B. Bailey, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 18, 1982, Ser. No. 390,143
Int. Cl.³ H04N 3/14
U.S. Cl. 358—213 2 Claims

1. A charge coupled device camera with integration control of incident light along an optical path comprising:

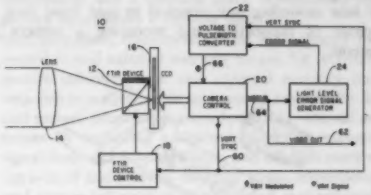
a lens in the path of said incident light;

a two dimensional charge coupled device, CCD, placed in the path of said incident light after it has passed through said lens;

a frustrated total internal reflection, FTIR, device placed between said lens and said CCD in said optical path;

means for controlling said FTIR device connected to said FTIR device;

camera control circuitry connected to said CCD;



a light level error signal generator connected to said camera control circuitry; and

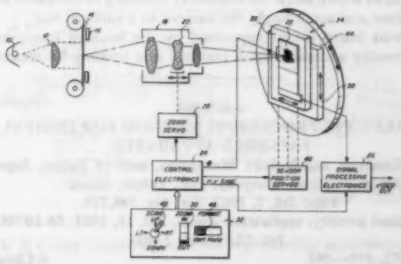
a voltage to pulsewidth converter connected between said camera control circuitry and and said FTIR control means and said light level error signal generator.

4,485,406

FILM VIDEO PLAYER WITH ZOOM AND SCAN

Scott A. Brownstein, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,061
Int. Cl.³ H04N 3/26
U.S. Cl. 358—227 6 Claims



1. In a film video player for sensing photographic images having a given resolution to produce a standard video signal having a lower resolution, the improvement comprising

(a) zoom means for selectively varying the magnification of said film image;

(b) scan means for selectively translating said film image vertically and horizontally whereby the resolution of the film image is available to be utilized by said video player; and

(c) means for selectively rotating said film image with respect to said video frames.

4,485,407

TELEVISION CAMERA FOR INDOOR AND OUTDOOR USE

Friedrich Böhm, Nuremberg, and Richard Sebald, Wiesental, both of Fed. Rep. of Germany, assignors to Grundig E. M.V., Fuerth, Fed. Rep. of Germany

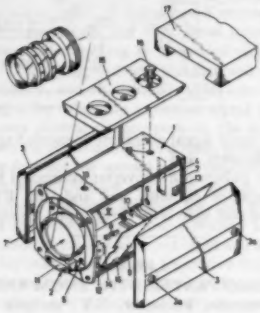
Filed Nov. 2, 1982, Ser. No. 438,473
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1981, 3144275
Int. Cl.³ H04N 5/26, 7/18
U.S. Cl. 358—229 14 Claims

1. A television camera adaptable to be connectable between indoor and outdoor use, comprising:

housing frame means having a generally rectangular box

configuration at least two lateral sides with openings therein and front and rear face, at least two housing lid means removably coupled to respective longitudinal sides over said openings and capable of creating a seal thereabout preventing undesired ingress or egress through said openings;

front face mounting unit coupled to said front face and capable of supporting and mounting a camera lens thereon;



guide means including base and guide means, the base being fixedly coupled to the top or bottom side of said housing frame means with the other adapted to be fixedly attached to a surface, said guide and base having cooperating surfaces which allow for releasably coupling of the guide and base and accordingly the camera to a surface; and

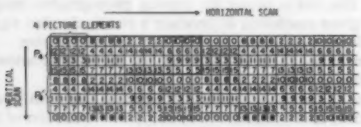
circuit board means supported by the housing frame and readily accessible upon removal of a housing lid means.

4,485,408

HALFTONE PROCESSING METHOD FOR DIGITAL FACSMILE APPARATUS

Eiji Kamizyo, and Noboru Murayama, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 7, 1982, Ser. No. 395,779
Claims priority, application Japan, Jul. 11, 1981, 56-107583
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—283 **6 Claims**



1. A method of processing a video image to produce a halftone image, comprising the steps of:

(a) scanning the video image along horizontal scan lines to detect a density level of each picture element of the video image;

(b) preparing a first threshold matrix comprising a plurality of different threshold levels or slice levels;

(c) preparing a second threshold matrix comprising each successive threshold level of the first threshold matrix repeated a predetermined number of times in the horizontal scan direction;

(d) comparing the detected density levels of the video image with the respective threshold levels of the second threshold matrix in one to one correspondence;

(e) producing a halftone image by determining each of the picture elements of the halftone image to be black when the density level of the video image is higher than the respective threshold level and white when the density level is lower than the respective threshold level; and

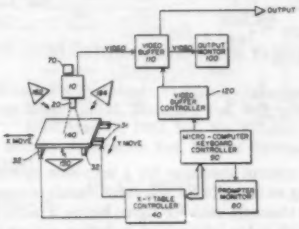
(f) providing means for selectively varying said predetermined number of times.

4,485,409

DATA ACQUISITION SYSTEM FOR LARGE FORMAT VIDEO DISPLAY

Peter M. Schumacher, Great Falls, Mont., assignor to Measuronics Corporation, Great Falls, Mont.

Filed Mar. 29, 1982, Ser. No. 363,272
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—294 **38 Claims**
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 16 Pages)



1. A data acquisition system for a large format analog video display comprising:

an objective surface upon which the subject to be displayed is placed;

means for acquiring a mosaic image of the entire subject in a plurality of analog video images of the subject, each analog video image being a segmented portion of the mosaic image of the subject, the video acquisition means being positioned relative to the subject so that the subject can be sequentially scanned in the segmented portions in a predetermined order by the video means; and

wherein each video image comprises a plurality of scan lines, each scan line consisting of continuous analog data;

means for causing relative movement between the video acquisition means and the subject so that the subject can be scanned in the segmented portions each segmented portion comprising one of the video images, said means for causing relative movement comprising;

processing means for receiving input commands and for supplying control signals to cause relative and sequential movement in a predetermined order between the objective surface and the means for acquiring analog video images;

lighting means for illuminating the objective surface for purposes of the video acquisition of data; and

data storage means connected to the means for acquiring the plurality of video images for storing the video images as the segmented portions of a mosaic display of the entire subject for subsequent mosaic processing.

4,485,410

GRAPHIC READING

Masaaki Fujinawa, and Susumu Saito, both of Hachioji, Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

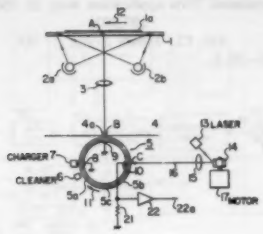
Filed Sep. 7, 1982, Ser. No. 415,454
Claims priority, application Japan, Sep. 7, 1981, 56-140609
Int. Cl.³ H04N *1/30*
U.S. Cl. 358—294 **10 Claims**

1. A graphic reader comprising:

a photoconductive layer having an outer surface which can be uniformly charged, said photoconductive layer being

provided on a cylindrical electrode divided into a plurality of segment electrodes along the axial direction which are insulated from each other in the azimuthal direction;

means for optically focusing an optical image and forming an electrostatic latent image thereof on said photoconductive layer;



means for scanning a laser beam on said photoconductive layer,

means for detecting a discharge current originating from an electric charge of the electrostatic latent image; and

means for detecting a synchronizing signal for the scanning of the laser beam.

4,485,411

SYSTEM FOR DELETING PICTURE INFORMATION

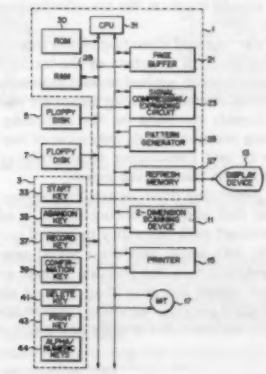
Kazuhiko Yamamoto, Yokosuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 29, 1981, Ser. No. 316,481

Claims priority, application Japan, Oct. 31, 1980, 55-153273

Int. Cl.³ H04N *1/22*

U.S. Cl. 358—296 **1 Claim**



1. A picture information filing apparatus which stores picture information and a retrieval title, including a retrieval code for retrieving the picture information, and outputs picture information corresponding to an input retrieval code, comprising:

scanning means for scanning picture information;

buffer means for storing said scanning picture information;

display means for displaying said picture information stored in said buffer means;

a control information input device comprising a keyboard having a record key for specifying recording of said picture information and a deletion key for specifying deletion of recorded picture information;

compandor means for compressing and expanding said picture information;

external memory means having areas for recording said picture information and areas for recording the retrieval title including the retrieval code, the length of the picture information and a deletion mark representing that the picture information is deleted; and

a microprocessor, responsive to said input device and connected to said external memory means, for recording said picture information in said external memory means in response to a signal from said record key and for deleting said picture information recorded in said external memory means by recording a deletion mark, in response to a signal from said deletion key, in said deletion mark recording area of said external memory means corresponding to said picture information to be deleted, said external memory means being external to said microprocessor.

4,485,412

ROTARY RECORDING MEDIUM REPRODUCING APPARATUS CAPABLE OF PERFORMING HIGH-SPEED SEARCH OPERATION

Hiroyuki Sugiyama, Isehara; Masaki Sakurai; Ryozo Abe, both of Yokohama, and Kenji Yoshihara, Chiba, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 11, 1982, Ser. No. 357,209

Claims priority, application Japan, Mar. 12, 1981, 56-34505[U]

Int. Cl.³ H04N *9/491*

U.S. Cl. 358—310 **6 Claims**

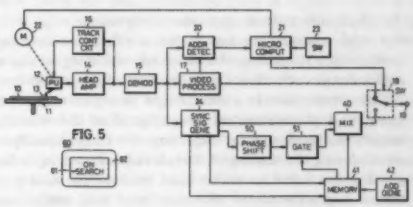


FIG. 5

1. A rotary recording medium reproducing apparatus comprising:

transferring means for transferring a reproducing element for reproducing a rotary recording medium, along a radial direction of said rotary recording medium, said transferring means transferring said reproducing element at a normal speed during a normal reproduction mode, and transferring said reproducing element at a speed higher than said normal speed during a search mode in which a search is performed with respect to a desired reproducing position on said rotary recording medium;

synchronizing signal generating means for generating a synchronizing signal consisting of a horizontal synchronizing signal and a vertical synchronizing signal synchronized with a synchronizing signal within a video signal reproduced by said reproducing element during said search mode;

switching means for selectively passing the video signal reproduced by said reproducing element and the synchronizing signal obtained from said synchronizing signal generating means; and

control means for controlling and switching said switching means so that said switching means passes the video signal reproduced by said reproducing element during the normal mode and passes the synchronizing signal obtained from said synchronizing signal generating means during the search mode, the signal passed through said switching means being supplied to a television receiver.

4,485,413
PROCESS AND APPARATUS FOR CONVERTING A VIDEO FRAME INTO A SET OF COLOR SEPARATION FILMS

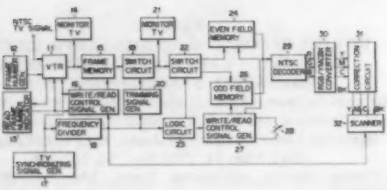
Haruo Furuta, Tokyo; Toshiji Fujita, Niiza; Chihiko Yamada, Tokyo, and Masaki Nojima, Urawa, all of Japan, assignors to Toppan Printing Company, Ltd., Japan

Continuation of Ser. No. 97,413, Nov. 26, 1979, abandoned. This application Sep. 23, 1981, Ser. No. 303,558

Claims priority, application Japan, Nov. 30, 1978, 53-148205; Mar. 3, 1979, 54-24264; Apr. 24, 1979, 54-168295; Jun. 1, 1979, 54-83750; Jul. 2, 1979, 54-97685; Jul. 31, 1979, 54-98345

Int. Cl.³ H04N *9/495*

U.S. Cl. 358—334 **20 Claims**



1. An electronic process apparatus comprising:

video tape reproducing means for reading a video tape containing a recording of a video television signal and an audio signal code identifying the area of the audio track which corresponds to a video frame recorded next subsequent to a predetermined frame signal of the recorded television signal and for detecting the frame specifying signal during the reading of the television signal, including a video head and an audio head, said video head positioned a predetermined distance from said audio head corresponding to the time required for a tape to be moved to reproduce one video frame so that said audio head traces that area of the audio track which corresponds to the video frame preceding the video frame that is being traced by said video head;

memory means connected to said reproducing means for storing a video frame signal being reproduced when said frame specifying audio signal is detected;

scanner means including a cylinder for supporting a plurality of monochromatic films for color separation processing, a plurality of exposure heads for exposing said films in accordance with said stored video frame signal, and a driving section for causing said cylinder to be rotated about its axis to cause said exposure heads to move relative to said films and along the axis of said cylinder a predetermined distance in synchronism with the rotation of said cylinder whereby said exposure heads scan said films with the circumferential direction of said cylinder as the main scanning direction; and

a signal processing circuit means connected to said memory means and said scanner means for (1) causing respective horizontal scanning line component signals of said stored frame component signal to be read a plurality of times from said memory means in a noninterlaced relation for each rotation of said cylinder and over a time corresponding to the size of said film, (2) converting the readout video frame signal into a plurality of color component signals for color separation processing and (3) supplying said color component signals to said exposure heads.

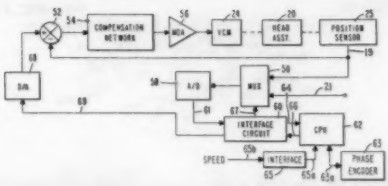
4,485,414
SERVO SYSTEM FOR POSITIONING A MOVABLE TRANSDUCING HEAD ASSEMBLY

Billy R. Baker, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Continuation-in-part of Ser. No. 138,206, Jul. 7, 1980, abandoned, which is a continuation of Ser. No. 956,816, Nov. 1, 1978, abandoned. This application Aug. 28, 1981, Ser. No. 297,291

Int. Cl.³ H04N *5/782, 5/783*

U.S. Cl. 360—10.3 **44 Claims**



1. In a system for transferring information signals with respect to a recording medium that is movable at various transport speeds:

transducing means for transferring information with respect to tracks oriented at an acute angle relative to the longitudinal direction of said recording medium;

means responsive to the recording medium transport speed for generating transport speed indication signals;

means for mounting said transducing means so that said transducing means is movable substantially transverse in either direction relative to the longitudinal direction of the tracks, said mounting means being carried by a rotatable element that is rotated so as to provide substantially all of the relative movement between said transducing means and said recording medium to transfer information with respect to said tracks as the transducing means scans said medium;

means for moving said mounting means transversely relative to the longitudinal direction of the tracks in response to drive signals being applied to said mounting means;

means coupled to said mounting means for sensing the information signals recorded on the recording medium and generating position signals indicative of the instantaneous position of said transducing means relative to the track scanned by the transducing means;

means for generating drive signals for moving the mounting means so that said transducing means is moved along a predetermined path trajectory to record each track along a specific path angle, said drive signal generating means being responsive to the position signals and said speed indication signals and providing varying drive signals to accommodate varying recording medium transport speeds to thereby maintain said specific path angle during recording.

4,485,415
METHOD FOR RECORDING DIGITAL INFORMATION

Toshiyuki Maegawa, Hiyashiosaka, and Haruo Nakatsuji, Ikoma, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 256,532, Apr. 22, 1981,. This application Jun. 16, 1983, Ser. No. 504,863

Claims priority, application Japan, Apr. 23, 1980, 55-54744

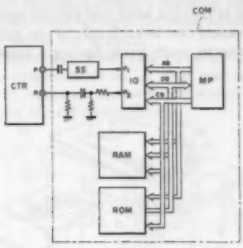
Int. Cl.³ G11B *5/09, 5/02*

U.S. Cl. 360—46 **5 Claims**

1. A method of preventing erroneous readout of digital data recorded on a recording medium having a first silence section, a ones section enconded subsequently to said first silence section, a second silence section subsequent to said ones section

and said digital data recorded thereon subsequent to said second silence section, in a system including a recording level adjusting circuit, comprising:

preventing an unwanted increase in recording gain by recording said ones section on said recording medium prior to recording said digital data thereon; and



playing back said digital data recorded on said recording medium the prevention of unwanted increase in system gain by said ones section preventing erroneous playback of said data.

4,485,416

AUTOMATIC REVERSING MECHANISM FOR A MAGNETIC-TAPE APPARATUS

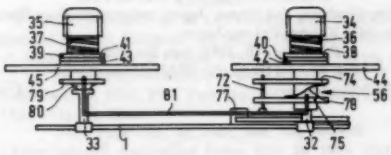
Robertus A. T. J. Walters, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 14, 1982, Ser. No. 398,460

Claims priority, application Netherlands, Jul. 24, 1981, 8103506

Int. Cl.³ G11B *19/06, 15/13, 15/30*

U.S. Cl. 360—74.2 **6 Claims**



1. A magnetic-tape apparatus which comprises

a frame,

two winding mandrels journalled in said frame about respective axes of rotation,

two capstans and associated pressure rollers,

a drive mechanism for said capstans and mandrels whose direction of rotation is reversible to permit the transport of the magnetic tape between the two winding mandrels in a first direction or in a second, opposite direction during recording and/or playback,

switching means for reversing the direction of rotation of the drive mechanism, and

a detection system which is coupled to one of the winding mandrel, for detecting a stoppage of said one winding mandrel while the apparatus is still in operation and for actuating the switching means in the event of such stoppage, which detection system comprises

an elongate member which is continuously reciprocated by the drive mechanism while the apparatus is in operation and which carries a pin, and

a detection plate which is frictionally coupled to said one winding mandrel and has a substantially U-shaped slot in which the pin slidably engages,

characterized in that the detection system comprises two said detection plates arranged underneath said one of the winding mandrels, which plates both cooperate with said pin and are respectively frictionally coupled to the one and to the other winding mandrel and are both arranged to be pivotable about the axis of rotation of the one winding mandrel.

4,485,417

PCM RECORDING AND REPRODUCING DEVICE

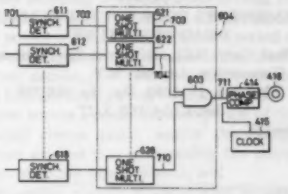
Minoru Ozaki, and Kunimaro Tanaka, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1982, Ser. No. 396,856

Claims priority, application Japan, Jul. 9, 1981, 56-108740; Jul. 9, 1981, 56-108741

Int. Cl.³ G11B *17/00*

U.S. Cl. 360—73 **12 Claims**



1. A PCM recording and reproducing device for recording audio signals of a single or plural channels on a plurality of tape tracks after converting the audio signals into digital signals, said device forming frames by periodically adding a synchronization mark for data synchronization in reproduction of the digital signals recorded on the tape tracks, said device including motor means for driving a tape and comprising:

a plurality of synchronization mark detecting circuits for detecting synchronization marks on the tape tracks;

a reference phase reproduction circuit, operatively connected to said synchronization mark detecting circuits, for providing a reference reproduction phase for a tape running operation based on at least one of the synchronization marks detected by said synchronization mark detecting circuits on at least one of the tape tracks; and

a phase comparator, operatively connected to said reference phase reproduction circuit, for comparing the reference reproduction phase with a reference phase, and for providing an output to the motor means.

4,485,418

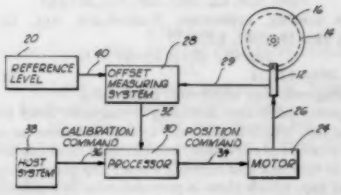
SYSTEM AND METHOD OF LOCATING THE CENTER OF A TRACK ON A MAGNETIC STORAGE DISK

Robert A. Bremmer, Oklahoma City, Okla., assignor to Magnetic Peripherals, Inc., Minneapolis, Minn.

Filed Aug. 12, 1982, Ser. No. 407,324

Int. Cl.³ G11B *5/56, 21/10*

U.S. Cl. 360—77 **6 Claims**



1. A system for accurately locating the center of a previously recorded magnetic track on a rotating magnetic storage disk, the system measuring in increments across the track

width a signal amplitude of the track above and below a predetermined reference level, the system comprising:

a transducer for recording and replaying signal information from the disk;

a motor attached to the transducer for moving the transducer over a nominal position of the track and moving the transducer in increments across the track width;

a computer processor having memory storage therein and connected to the motor, the processor upon receiving a calibration command causing the motor to move the transducer in small increments across the track width;

an offset measuring system connected to the transducer and the processor for determining if the signal amplitude is greater or less than the reference level after each increment movement.

4,485,419

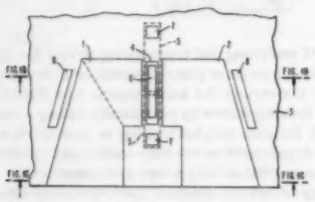
COMPLEMENTARY POLE COUPLING MAGNETIC HEAD STRUCTURE

Albert W. Vinal, Cary, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 15, 1982, Ser. No. 388,784

Int. Cl.³ G11B *5/12*

U.S. Cl. 360—125 **5 Claims**



1. A magnetic read head structure, comprising:

a magnetically responsive electrical transducer element having a preferentially sensitive plane for sensing magnetic fields;

at least two magnetically permeable field coupling legs, said legs being non-contacting and having proximate and distal ends;

said proximate ends being arranged to confront a magnetically recorded medium whose content is to be read and, said distal ends being arranged to form a magnetic field gap;

said magnetically sensitive electrical transducer element being located in said gap and oriented so that the magnetic field in said gap passes through said transducer in a plane parallel to said preferentially sensitive plane therein.

4,485,420

MAGNETIC-TAPE CASSETTE APPARATUS HAVING VERY LOW AZIMUTH ERROR

Johannes J. M. Schoenmakers, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 12, 1982, Ser. No. 367,314

Claims priority, application Netherlands, Apr. 13, 1981, 8101795; Jan. 19, 1982, 8200175

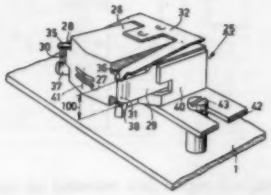
Int. Cl.³ G11B *15/60, 5/10*

U.S. Cl. 360—130.21 **26 Claims**

1. A magnetic-tape apparatus, comprising

a magnetic head unit including a magnetic head having a head face which is generally cylindrical about an axis and has a radius of curvature, and having a head gap terminating in said face and defining a head gap plane through the head gap, which plane is perpendicular to a plane tangential to the head face at the gap; and also including two height limiter elements disposed one on each side of the head gap; and

means for passing a magnetic tape along said face in a direction of transport generally perpendicular to the head gap plane and arranged such that the height limiter elements are on opposite sides of the gap in the direction of transport of the tape, each height limiter having a limit surface arranged to limit movement of said tape in at least one direction transverse to the direction of transport of the tape and parallel to said plane tangential to the head face, characterized in that the head unit further includes two tape guides, disposed one to each side of the gap in said direction of transport, each guide having a guide surface having a radius of curvature arranged to maintain the tape lateral edges taut at the location of the guide surface, and an end, and each guide being arranged such that tape being passed along the head face contacts each guide; and



the apparatus comprises control means for keeping a lateral edge of the tape constantly in contact with said limit surfaces during tape transport, each height limiter element being disposed adjoining an end of a respective tape guide, the limit surfaces adjoining the respective guide surfaces at points on a connecting line which extends perpendicular to said head gap plane.

4,485,421

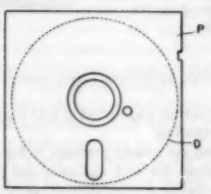
COLORED FLOPPY DISKETTE

Takahiro Hoshino, Yokohama, Japan, assignor to Toyo Bussan Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1984, Ser. No. 598,918

Int. Cl.³ G11B *23/02;* **B65D** *85/30, 85/57*

U.S. Cl. 360—133 **1 Claim**



1. A colored floppy diskette comprising a package consisting of a laminate composed of a sheet substrate made of a synthetic resin of any selected color and a liner attached to one surface of said sheet substrate with a conductive fibrous layer therebetween, and a magnetic disk sealed into said package.

4,485,422

SECONDARY ARC EXTINCTION DEVICE

Tomio Takanashi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 24, 1982, Ser. No. 381,395

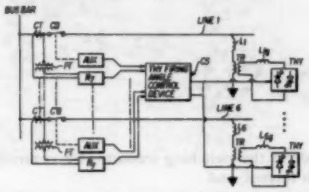
Claims priority, application Japan, May 29, 1981, 56-82128

Int. Cl.³ H02H *7/22*

U.S. Cl. 361—43 **8 Claims**

1. A secondary arc extinction device in an electric power system, comprising:

a bus bar;
an electric power line connected to said bus bar;
protective relaying means connected to said bus bar;
first reactance means having two terminals, one terminal of said first reactance means being connected to said electric power line;
a transformer having a primary winding and a secondary winding connected between the other terminal of said first reactance means and ground;
second reactance means includes a reactor and anti-parallel thyristors connected in series with said reactor wherein said second reactance means is connected to said secondary winding of said transformer;



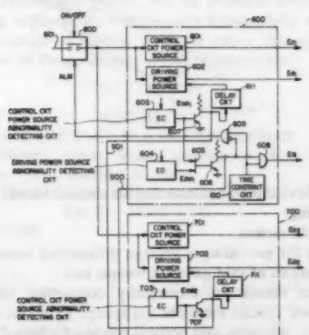
a circuit breaker having an auxiliary contact connected between said bus bar and said electric power line for responding to the output of said protective relaying means;
means for controlling said second reactance means in response to an output of one of said protective relaying means and said auxiliary contact of said circuit breaker;
wherein said means for controlling includes means for varying the firing angle of said thyristors of said second reactance means about a predetermined value corresponding to said predetermined reactance.

4,485,423

POWER SOURCE FOR CONTROL EQUIPMENT

Masayuki Hattori, Hachioji, and Shigeo Nakamura, Hino, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

PCT No. PCT/JP81/00306, § 371 Date Jun. 28, 1982, § 102(e) Date Jun. 28, 1982, PCT Pub. No. WO82/01625, PCT Pub. Date May 13, 1982
PCT Filed Oct. 28, 1981, Ser. No. 394,940
Claims priority, application Japan, Oct. 29, 1980, 55-151784
Int. Cl.³ H02J 1/00
U.S. Cl. 361—92 **7 Claims**



1. A compound power source for control equipment, comprising:
a power source switch;
a main power source and at least one additional power source, each of said main and additional power sources operatively connected to said power source switch and comprising:
control circuit and driving power sources operatively connected to said power source switch;
a control circuit power source abnormality detecting circuit, operatively connected to said control circuit power source, for detecting abnormality of said control circuit power source and generating an output;
a driving power source abnormality detecting circuit, operatively connected to said driving power source, for detecting abnormality of said driving power source and generating an output;
a control circuit, operatively connected to said driving power source, said control circuit power source abnormality detecting circuit and said driving power source abnormality detecting circuit, for turning ON said driving power source a predetermined period of time after said control circuit power source abnormality detecting circuit decides that said control circuit power source has become normal, and for turning OFF said driving power source a predetermined period of time after said control circuit power source abnormality detecting circuit decides that abnormality has occurred in said control circuit power source; and
an OR circuit, operatively connected to said control circuit power source abnormality detecting circuit and said driving power source abnormality detecting circuit, for ORing the outputs of said control circuit power source abnormality detecting circuit and said driving power source abnormality detecting circuit and generating an output;
a first interface, operatively connected to all said driving power sources and all said control circuit power source abnormality detecting circuits, for turning ON all said driving power sources substantially concurrently when it is decided from a signal obtained by ORing the outputs from all said control circuit power source abnormality detecting circuits that all said control circuit power sources have reached their normal state, and for turning OFF all said driving power sources substantially concurrently after a predetermined period of time when it is decided that abnormality has occurred in any one of said control circuit power sources; and
a second interface, operatively connected to all said OR circuits, said driving power source abnormality detecting circuits, the control equipment and said power source switch, for turning ON an enable signal to be sent from said main power source to the control equipment when it is decided from the outputs from all said OR circuits that all said control circuit power sources and all said driving power sources have reached their normal state, and for turning OFF the enable signal and said power source switch, by a signal output only by said main power source, when it is decided that abnormality has occurred in any one of said control circuit power sources and said driving power sources.

4,485,424

PROCESS AND CIRCUIT FOR EXCITING SOLENOID COIL

Hideo Niwa, and Kozi Takahashi, both of Aichi, Japan, assignors to Sanmeidenki Kabushikikaisha, Japan

Filed Sep. 29, 1982, Ser. No. 426,415
Claims priority, application Japan, Jun. 9, 1982, 57/99074
Int. Cl.³ G01F 1/58
U.S. Cl. 361—152 **7 Claims**

3. A circuit for exciting a solenoid coil which comprises an AC power source, a solenoid coil for operating an iron core, and a circuit provided between and connected to said AC power source and said solenoid coil so as to full-wave rectify the power from said AC power source and supply the rectified

power to said solenoid coil and is characterized in further having the following means:

(a) a switch element provided between and connected to said full-wave rectification circuit and said solenoid coil so as to interrupt the supply of said rectified power to said solenoid coil; and

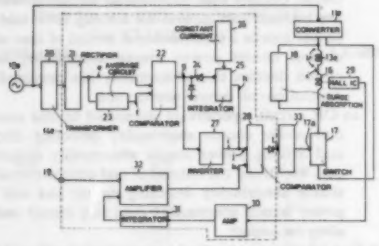
(b) a control circuit connected to said switch element wherein in the following period (i), a signal for placing said switch element in a cut-off state is applied to the switch element, and in the following period (ii), a signal for placing said switch element in an energized state is applied to the switch element:

(i) a continuous period including a period before time at the minimum value of a full-wave rectification wave-form of a sine wave and a period after said time, and

(ii) other periods except said continuous period,

wherein said control circuit comprises:

(c) a circuit for full-wave rectify an AC signal from said AC power source;



(d) a first comparison circuit adapted to be not only supplied with a reference of a fixed level in advance, but also supplied with the signal from said rectification circuit (a) so as to compare the two signals with each other and output a signal to make said switch element electrically conductive for each period of time corresponding to the top and its vicinities of the voltage wave-form of said rectified signal;

(e) a circuit for integrating said signal from said first comparison circuit;

(f) an input terminal adapted to be supplied with a command signal; and

(g) a second comparison circuit for comparing an output signal from said integration circuit and the command signal from said input terminal and supplying said switch element with a signal to make said switch element electrically conductive only for each period of time corresponding to the value of said command signal during the time of the top and its vicinities of the voltage wave-form of said rectified signal.

4,485,425

DRIVE CIRCUIT FOR PRINTER, PARTICULARLY, MATRIX PRINTER OF THE NEEDLE OR HAMMER VARIETY

Manfred Grüner, Ulm, and Bernd Gugel, Ulm-Einsingen, both of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Dec. 16, 1982, Ser. No. 450,259

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1981, 3151242

Int. Cl.³ H01H *47/32*

U.S. Cl. 361—153 **7 Claims**

1. In a printer such as a matrix printer, a drive circuit for an impact element such as a printing hammer or a print needle, comprising:

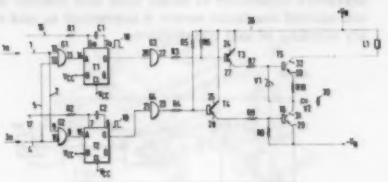
an electromagnetic element for activating the impact element;

a series circuit including the electromagnetic element, a first drive transistor and a second switching transistor, the series circuit to be connected between two sources of voltage potential;

two timing members responsive to print signals and producing two pulses of different duration;

a first transistor circuit connected between the timing member furnishing the longer pulse and the base electrode of the drive transistor for controlling conduction thereof;

a second transistor circuit connected between the timing member furnishing the shorter pulse and the base elec-



trode of the switching transistor for controlling conduction thereof; and

current limiting control means connected to the series circuit and to the base of the drive transistor for limiting the current flow through the drive transistor and the electromagnetic element, the limiting period beginning after a leading edge and rising of the current, the shorter period terminating during the current pulse, terminating of the longer period terminates the current pulse at a steeper trailing edge.

4,485,426

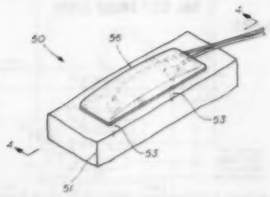
SECURITY GARMENT

Edward E. Kerls, 1203 Dewberry La., Edna, Tex. 77957

Filed Dec. 29, 1983, Ser. No. 566,671

Int. Cl.³ F41B *15/04*

U.S. Cl. 361—232 **7 Claims**



1. A device for administering an electric shock, said device comprising:

garment means;

means for providing a voltage differential between spaced locations of said garment means; and

contact means for electrically contacting said garment means' spaced locations via spaced locations of a being's body, whereby said body is rendered adapted to close an electrical circuit which includes said voltage differential providing means, said contact means comprising,

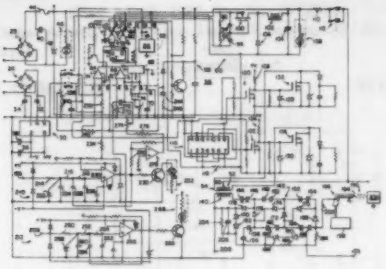
(a) a pair of spaced pin members each having a puncture point, said pin members each being substantially encased within a flexible pad, wherein said puncture points are adapted to exit said pad and contact said body.

4,485,427

FOLD-BACK POWER SUPPLY

Frederick W. Woodruff, and Daniel C. Hughey, both of Indianapolis, Ind., assignors to Ransburg Corporation, Indianapolis, Ind.

Filed Apr. 19, 1982, Ser. No. 369,365
Int. Cl.³ H02H 3/08
U.S. Cl. 361—235 16 Claims



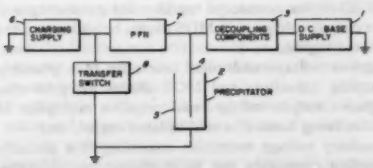
1. A power supply for a coating material dispenser for dispensing electrostatically charged particles of coating material, the power supply including means for generating an electrostatic charging potential, the electrostatic potential generator including a control input, means for monitoring the electrostatic potential, means for coupling the electrostatic potential monitor to the electrostatic potential generator, means for monitoring the current flow in the electrostatic potential generator, means for coupling the current-monitoring means to the electrostatic potential generator, first circuit means for generating a fold-back voltage-current characteristic, means for coupling the electrostatic potential monitor to an input of the first circuit means, the means for coupling the electrostatic potential monitor to an input of the first circuit means including means for filtering from the monitored electrostatic potential signal those frequencies above a desired cutoff frequency, means for coupling the current monitor to an input of the first circuit means, and means for coupling an output of the first circuit means to the control input of the electrostatic potential generator, the first circuit means controlling the electrostatic potential generator in such a manner as to generate a potential-current plate varying substantially along an increasing current-decreasing potential curve throughout a first region of the potential-current characteristic, and the potential and current both varying substantially continuously substantially along a decreasing current-decreasing potential curve throughout a second region of the potential-current characteristic.

4,485,428

HIGH VOLTAGE PULSE GENERATOR

Neville W. Harris, Acton, Mass., assignor to High Voltage Engineering Corp., Burlington, Mass.

Filed May 10, 1982, Ser. No. 376,667
Int. Cl.³ H05F 3/00
U.S. Cl. 361—235 11 Claims



1. An electrostatic precipitator circuit comprising:

(a) precipitator electrodes including at least one corona electrode and at least one collector electrode;

(b) a voltage source of rectified voltage connected across said precipitator electrodes so as to charge them to that voltage and deliver continuous current;

(c) a pulse forming network (PFN) adapted to deliver pulsed currents to the corona electrode of the precipitator;

(d) means for charging said PFN including, in combination with said voltage source which applies voltage of one polarity to one side of said PFN, a charging supply which applies voltage of opposite polarity to the other side of said PFN;

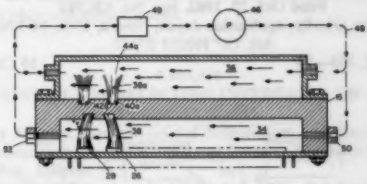
(e) a transfer switch connecting said collector electrode to said corona electrode through said PFN, so that closing said switch discharges the PFN across said precipitator electrodes.

4,485,429

APPARATUS FOR COOLING INTEGRATED CIRCUIT CHIPS

Faquir C. Mittal, Audubon, Pa., assignor to Sperry Corporation, New York, N.Y.

Continuation of Ser. No. 386,556, Jun. 9, 1982, abandoned. This application Jan. 30, 1984, Ser. No. 574,944
Int. Cl.³ H05K 7/20
U.S. Cl. 361—386 2 Claims



1. An integrated circuit chips cooling apparatus, comprising:

a housing including a board having integrated circuit chips mounted thereon, said chips having a substantially planar surface;

means mounted in the housing for separating first and second cooling portions, said separating means including a cold plate and said chips being in said first portion opposite said plate;

means including bunched, heat-conductive strands connected together at a first end to one side of said cold plate and having a second end extending into said first cooling portion flexing and spreading apart in contact with said planar surface of a respective chip;

a fluid inlet in said housing;

a fluid outlet in said housing; and

other bunched, heat conductive strands having a first end conneted to another side of said cold plate opposite said one side, said other strands having a second end spreading and extending freely into said second cooling portion.

4,485,430

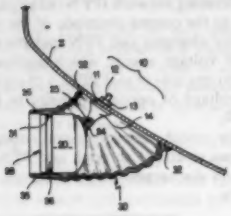
COMPLEMENTARY PROJECTOR FOR A MOTOR VEHICLE

Victor Achiaga Fustel, Bobigny, France, assignor to Cibie Projecteurs, Bobigny, France

PCT No. PCT/FR82/00013, § 371 Date Oct. 8, 1982, § 102(e) Date Oct. 8, 1982, PCT Pub. No. WO82/02522, PCT Pub. Date Aug. 5, 1982
PCT Filed Jan. 21, 1982, Ser. No. 425,074
Claims priority, application Spain, Jan. 22, 1981, 255709; Dec. 18, 1981, 262138
Int. Cl.³ F21V 29/00
U.S. Cl. 362—267 7 Claims

1. An auxiliary spotlight for securing to the outside of an

automobile vehicle having an assembly support (10, 50) for fixing on any zone of assembly (Z) of the automobile vehicle and a sealed beam unit (20, 60) adjustably mountable on the assembly support (10, 50), said light comprising: a deformable



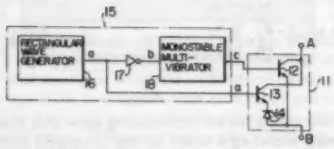
tubular element (30, 70) engaged with the front peripheral zone (26, 63) of said beam unit, surrounding both the assembly support and the sealed beam unit and hermetically applied against said zone of assembly of the vehicle.

4,485,431

DC-DC CONVERTER

Hideo Ishiguro, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 27, 1982, Ser. No. 436,942
Claims priority, application Japan, Nov. 2, 1981, 56-174562
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—20 **10 Claims**



1. A DC-DC converter in which a DC voltage is intermittently applied to a primary side of a transformer from a DC power supply source to obtain a secondary voltage from a secondary side of said transformer, comprising:

(a) a switching circuit connected between said power supply source and the primary side of said transformer to perform repeatedly turn-on and blocking operations, said switching circuit setting a predetermined terminal voltage at a predetermined level at which current in the primary side of said transformer ceases to flow in the switching process from the conducting state to the blocking state; and

(b) a switching control circuit connected to said switching circuit for controlling the conduction and the blocking of said switching circuit and a time interval during which said predetermined terminal voltage is set.

4,485,432

ELECTRONIC VOLTAGE DROP CIRCUIT

Masaki Kidena, Yokohama, and Akihiro Nishizaka, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Aug. 19, 1982, Ser. No. 409,614
Claims priority, application Japan, Aug. 27, 1981, 56-134658
Int. Cl.³ H02M *3/06*
U.S. Cl. 363—62 **6 Claims**

1. An electronic circuit comprising:

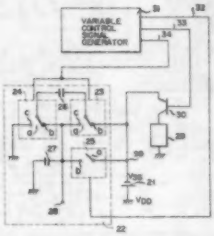
battery means;

voltage drop circuit means for dropping the output voltage of said battery means to provide a dropped voltage, said voltage drop circuit means including two impedance means and switching means for selectively arranging said two impedance means in series connection to said battery means during a charge period and for arranging said two impedance means in parallel connection;

load means driven by said battery means;

power source switching means for allowing the power supply to be intermittently supplied from said battery means to said load means; and

control means for controlling said switching means and said power source switching means for setting the charge



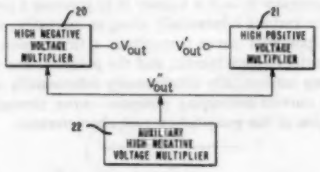
period to said two impedance means within the no power supply period to said charge load means by producing a drive control pulse signal applied to said power source switching means and alternately changing the signal level between a drive level to said load means and a non-drive level, and by producing a switch control pulse signal applied to said switching means and having a charge level during the non-drive period of said drive control pulse signal.

4,485,433

INTEGRATED CIRCUIT DUAL POLARITY HIGH VOLTAGE MULTIPLIER FOR EXTENDED OPERATING TEMPERATURE RANGE

James A. Topich, Centerville, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 22, 1982, Ser. No. 452,239
Int. Cl.³ H02M *3/18*
U.S. Cl. 363—60 **10 Claims**



1. A dual polarity voltage amplifier integrated circuit on a semiconductor substrate of a first conductivity type having an isolated region of an opposite conductivity type, said circuit comprising:

a positive voltage multiplier consisting of a plurality of coupling capacitors and metal-oxide-semiconductor (MOS) diodes connected together for generating a positive output voltage, said MOS diodes being located in said isolated region;

a negative voltage multiplier consisting of a plurality of coupling capacitors and MOS diodes for generating a negative output voltage, said negative multiplier MOS diodes being located in said isolated region; and

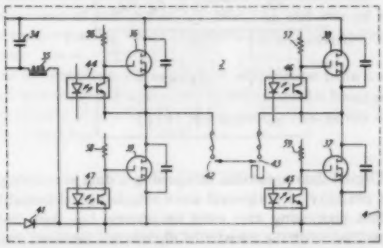
an auxiliary voltage multiplier consisting of a plurality of coupling capacitors and MOS diodes for generating a negative output voltage more negative than said negative multiplier output, said auxiliary multiplier MOS diodes

being located in said isolated region and said auxiliary multiplier output applied to said isolated region.

4,485,434
POWER SUPPLY FOR ARC LAMPS

Timothy W. Beeston, Hants, and Laurence S. Attrill, Barnet, both of England, assignors to Lee Electric (Lighting) Limited, England

Filed Jul. 12, 1982, Ser. No. 397,596
Claims priority, application United Kingdom, Jul. 28, 1981, 8123254
Int. Cl.³ H02M *7/537*
U.S. Cl. 363—132 **12 Claims**



1. A power supply for an arc lamp, comprising a power source and an inverter, characterized in that the power source is a constant current source for the supply of current to the inverter and comprises, connected in series, a rectifier, a capacitor, an inductor and a field effect transistor, the inverter being connected in parallel with said capacitor so that current supplied from the rectifier to the inverter is drawn through said inductor by said field effect transistor, there being provided a chopper oscillator for controlling conduction of said field effect transistor and means connected to said oscillator and responsive to the current in said field effect transistor so that said oscillator is inhibited to terminate conduction of said field effect transistor when the current therethrough exceeds a predetermined value, whilst the inverter comprises a bridge network of field effect transistors and an oscillator adapted to supply square wave switching pulses to the bridge transistors, whereby the bridge network affords an output current of alternating square pulses of current of equal duration for driving the lamp.

4,485,435
MEMORY MANAGEMENT METHOD AND APPARATUS FOR INITIALIZING AND/OR CLEARING R/W STORAGE AREAS

Henry C. Sibley, Adams Basin, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Mar. 9, 1981, Ser. No. 241,819
Int. Cl.³ G06F *11/00*
U.S. Cl. 364—200 **13 Claims**

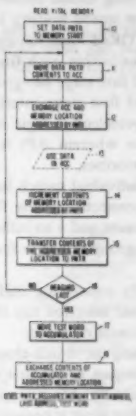
1. A method of assuring that a computer memory area is cleared of pre-existing data before employing said memory area, which memory area is located between initial and final addresses, and is addressed by a pointer, comprising the sequential steps of:

(a) initially loading said pointer with an address to a location between said initial and final addresses, thereby defining an addressed location,

(b) writing the address of said addressed location into said addressed location so that said addressed location contains its own address,

(c) modifying the contents of said addressed memory location in a predetermined fashion so that the modified contents of said addressed memory location can be used to address a different location in said memory area,

(d) using the modified contents of the addressed location in a subsequent program step,

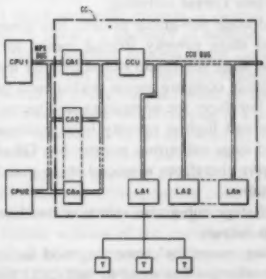


(e) and repeating said steps (b)–(d) for each other location within said memory area.

4,485,436
SYSTEM FOR SELECTING INTERFACES ON A PRIORITY BASIS

Pierre Austruy, Nice, and Gerard Dalboussiere, LaColle, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 81,420, Oct. 3, 1979, abandoned. This application Aug. 21, 1981, Ser. No. 295,182
Claims priority, application France, Nov. 30, 1978, 78 34432
Int. Cl.³ G06F *9/18*
U.S. Cl. 364—200 **6 Claims**



1. In a system wherein quick CCU to component connection has to be established on a priority basis through a given group of first stage interfaces individually attached to said components making requests for service at different and variable priority levels and a CCU BUS connected to a Central Control Unit (CCU), a selection system for selecting one of said first stage interfaces said selection system including:

means for dividing said groups of first stage interfaces into at least two sub-groups, each of said sub-groups being provided with an asynchronously and independently operating preselection system, said preselection system including:

individual first stage storing means within each first stage interface for storing a data (APi) representative of the

priority level of the current service request made to said interface by said attached component;

a first stage sub-group priority bus connected to all the individual storing means of the sub-group for ORing said sub-group stored priority levels and for deriving therefrom an ORed logic sub-group condition APB;

comparing means within each first stage interface, connected to said first stage sub-group priority bus and to said individual first stage interface storing means for generating a preselection logic condition Pi in any first stage interface wherein APi is equal to the highest ORed APB priorities;

a two position individual switch having a so-called vertical position connected to the first stage interface attached component and a so-called horizontal position;

a first stage sub-group selection line having an input and an output;

means for serially connecting said first stage sub-group interfaces to said selection line through said individual switches horizontal positions;

means for switching the switch closest to the selection line input and belonging to the first stage sub-group interface wherein said Pi=1 to its vertical position, whereby said selection line input is connected to said preselected component;

a second stage interface for interfacing each of said sub-group of first stage interfaces, said second stage interface also having a two position individual switch having a so-called vertical position connected to the interfaced first stage selection line input, and a so-called horizontal position; and also having a second stage priority storing means connected to said interfaced first stage sub-group priority bus for storing at least the highest priority level indication among said ORed logic conditions APB of said interfaced first stage sub-group;

means for dividing the second stage interfaces into at least one second stage sub-group each of said second stage sub-groups being provided with an asynchronously operating second stage preselection system, said second stage preselection system including:

a second stage sub-group priority bus connected to said second stage priority storing means for ORing said second stage sub-group stored priority levels;

second stage compare means within each of said second stage interfaces for comparing said second stage interface stored highest priority level indication with said second stage sub-group priority bus ORed indications, to derive therefrom a second stage preselection logic condition;

a second stage sub-group selection line having an input and an output;

connecting means for connecting said second stage sub-group selection line input to said CCU bus;

means for serially connecting said second stage sub-group interfaces to said second stage sub-group selection line input through their individual switches horizontal positions;

means for switching the second stage sub-group switch closest to the second stage sub-group selection line input to its vertical position under control of said second stage preselection logic condition, whereby said second stage sub-group selection line is connected to said CCU bus through said connecting means;

whereby said preselected component attached to a first stage interface is connected through said first and second stage selection lines to said CCU bus for quick selection upon CCU selection command.

4,485,437

TESTING THE PRESENCE OF A PERIPHERAL DEVICE

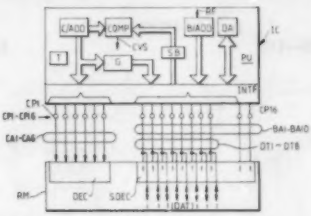
John R. Kinghorn, Sutton, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 10, 1982, Ser. No. 387,117

Claims priority, application United Kingdom, Jun. 26, 1981, 8119756

Int. Cl.³ G06F *1/00*

U.S. Cl. 364—200 12 Claims



1. Digital data apparatus comprising a data processing unit and a plurality of peripheral units selectively addressable by the data processing unit over an address bus with bi-level address codes for the transfer of digital data between the data processing unit and an addressed peripheral unit over a data bus, each peripheral unit having a special storage location for the storage of a multi-bit identification code which identifies uniquely the periheral unit, characterized in that the data processing unit includes interrogation means for testing the presence of a peripheral unit corresponding to an address code applied to the address bus, said interrogation means comprising first means for requesting from that addressed peripheral unit during an interrogation period the transfer of its identification code to the data processing unit over the data bus for comparison with a corresponding code in the data processing unit, second means for causing at least one data line of the data bus to assume during said interrogation period an inverse active level which is opposite to the proper active level on that data line in response to a correct application of the relevant bit of the identification code on that data line, said inverse active level being de-activated by said second means in the presence of the proper active level on the data line, and third means for sensing as part of said comparison the prevailing active level of the data line.

4,485,438

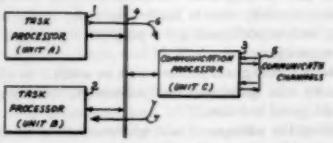
HIGH TRANSFER RATE BETWEEN MULTI-PROCESSOR UNITS

Erik R. Myrmo, and Michael F. Wells, both of 7290 Engineer Rd. #F, San Diego, Calif. 92111

Filed Jun. 28, 1982, Ser. No. 393,008

Int. Cl.³ G06F *15/16*

U.S. Cl. 364—200 14 Claims



1. In a network of data processing equipment, wherein transfers of information take place between memories of at least two units communicating over a common system bus, an apparatus for expediting said transfer which comprises:

means for recognizing an attention request message from another unit;

an ouput data port;

means for causing the transmitting unit to place on the bus an attention request message addressed to the receiving unit;

means for effecting a source direct-memory-access channel operation for the transfer of information between a local memory and the output data port of the transmitting unit;

means, responsive to said means for recognizing, for causing the receiving unit to effect an acceptor direct-memory-access channel operation between the output data port of the transmitting unit and a local memory of the receiving unit across said system bus in synchronization with said source direct-memory-access channel operation; and

wherein one of said means for effecting and one of said means for causing reside together on a first unit and comprise:

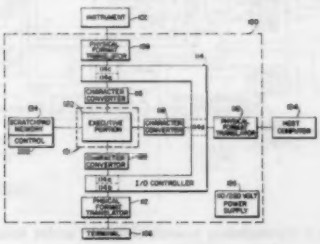
means for receiving a first batch of information from a second unit while a second batch of information is being sent, the transfer of said batches taking place concurrently over the system bus.

4,485,439

STANDARD HARDWARE-SOFTWARE INTERFACE FOR CONNECTING ANY INSTRUMENT WHICH PROVIDES A DIGITAL OUTPUT STREAM WITH ANY DIGITAL HOST COMPUTER

Robert Rothstein, Dallas, Pa., assignor to S.A. Analis, Namur, Belgium

Filed Jul. 27, 1982, Ser. No. 402,385
Int. Cl.[3] G06F *3/00*
U.S. Cl. 364—200 **48 Claims**



1. In a communication system having a digital host computer and an instrument which generates a stream of serial digital outputs, a universal communication interface coupled between the host computer and the instrument, the interface comprising:

a microprocessor having executive means for executing instructions entered by the host computer into the microprocessor, the instructions forming a set of distinct instructions; and

a scratchpad memory for receiving and storing digital signals;

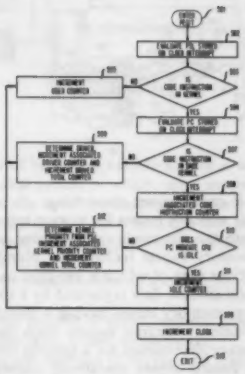
wherein the executive means divides the scratchpad memory into a defined structure of at least one record in response to the receiving of at least one corresponding instruction having a selectable variable portion from the host computer, the selected variable portion determining the defined structure of the scratchpad memory and wherein digital signals, corresponding to the digital outputs from the instrument, are directed into and in conformance with the defined structure of one of the at least one record in response to a corresponding instruction from the host computer.

4,485,440

CENTRAL PROCESSOR UTILIZATION MONITOR

Thomas G. Duff, Tinton Falls, and Chester S. Zaluk, Middletown, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 305,122, Sep. 24, 1981, abandoned. This application Feb. 13, 1984, Ser. No. 579,370
Int. Cl.[3] G06F *11/32, 11/34*
U.S. Cl. 364—300 **12 Claims**



1. In a computer system including a clock generator for generating clock interrupt pulses at a predetermined rate which invoke a clock interrupt process, a central processor unit, and a memory having a plurality of memory locations, wherein in the clock interrupt process, upon occurrence of each of the clock interrupt pulses, the central processor unit generates and stores in predetermined ones of the memory locations first and second code words relating to a corresponding program code instruction to be executed by the central processor unit upon termination of the interrupt process, the first code word including a plurality of bits identifying a module in the program that the corresponding code instruction is in, and the second code word including a plurality of bits representing a virtual address of the corresponding code instruction, a method to be executed by the central processor unit for monitoring program code instruction utilization of the central processor unit, comprising the steps of,

determining from said stored first code word bits whether said corresponding code instruction is in a program module under evaluation,

determining from said stored second code word virtual address bits a mode of use of the central processor unit by said corresponding code instruction which is in the program module under evaluation,

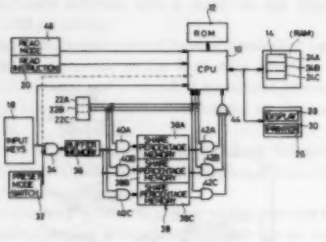
identifying a memory location in said memory assigned to said corresponding code instruction by utilizing predetermined ones of said stored second code word virtual address bits, and

incrementing a count of said corresponding code instruction mode of use of the central processor unit stored in said assigned memory location.

4,485,441
CLERK SHARE CALCULATION IN AN ELECTRONIC CASH REGISTER

Hiroshi Nakatani, Yamatokoriyama, and Hachizou Yamamoto, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 14, 1981, Ser. No. 311,272
Claims priority, application Japan, Oct. 20, 1980, 55-147121
Int. Cl.[3] G06F *15/24, 7/48*
U.S. Cl. 364—405 **7 Claims**

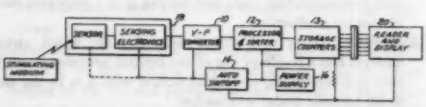


1. An electronic cash register comprising:
transaction data memory means for storing transaction data registered into the electronic cash register, said transaction data memory means including a plurality of data memory sections each of which is assigned to accumulate the transaction amount data registered by a specific clerk;
share percentage memory means having a plurality of share percentage memory section means, each for storing a share percentage determined for a specific clerk;
read operation control means operatively connected to said transaction data memory means for reading out said transaction data accumulated in said plurality of data memory sections of said transaction data memory means; and
share calculation control means operatively connected to said share percentage memory means and said read operation control means for reading out said share percentage stored in a selected one of said share percentage memory section means corresponding to a selected one of said data memory sections from which said transaction data is being read out, and for multiplying said transation amount data read out from said one of said data memory sections with said share percentage read out from said corresponding one of said share percentage memory section means corresponding thereto, thereby obtaining a share of said specific clerk.

4,485,442
CUMULATIVE EXPOSURE METERING SYSTEM

Alvin A. Snaper, 2800 Cameo Cir., Las Vegas, Nev. 89107, and Stephen Bortniak, 2109 NE. 138th St., Vancouver, Wash. 98665

Filed Sep. 24, 1981, Ser. No. 305,182
Int. Cl.[3] G06F *15/42*; G06G *7/54*
U.S. Cl. 364—414 **9 Claims**

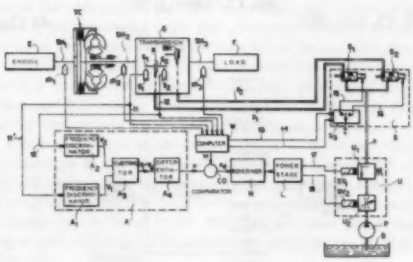


1. An exposure metering system in which exposure times to discrete strength levels of a radiation medium are recorded comprising:
sensing means sensing a radiation medium and producing an output voltage;
converting means receiving and converting said output voltage to a plurality of electrial pulses whose frequency represents a discrete strength level of said stimulating medium;
processing means for processing the electrical pulses from said converting means, said processing means comprising;
means for producing pulses having a timed interval;
logic means combining said timed interval pulses and said plurality of pulses to produce a logic output indicative of said discrete strength level;
a plurality of storage means, each of said storage means representing a discrete strength level; and
addressing means receiving said logic output and directing pulses to one of said storage means according to the discrete strength level whereby the number of pulses received by said storage means provides a record of the approximate time period of exposure to the strength level of radiation represented by each of said storage means.

4,485,443
TORQUE-CONTROL SYSTEM FOR AUTOMATIC SPEED CHANGER SHIFTABLE UNDER LOAD

Dietrich Knödler; Werner Boes, both of Friedrichshafen; Anton Ott, Tettnang, and Kurt O. Venger, Friedrichshafen, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 065,106, Aug. 9, 1979, abandoned. This application May 27, 1981, Ser. No. 267,700
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1978, 2835051
Int. Cl.[3] B60K *41/04*; F16D *43/284*; G06F *15/20*
U.S. Cl. 364—424.1 **5 Claims**



1. In a transmission system shiftable under load provided with a gear-shifting stage comprising a friction coupling with relatively rotatable input and output members that are progressively interengageable by hydraulic fluid from a source provided with flow-regulating means,
the combination therewith of:
sensing means operatively coupled with said members for generating a measuring signal proportional to the relative rotary speed thereof calculated as an absolute difference of respective speeds of said members;
computer means connected to said sensing means for emitting a precalculated reference signal proportional to a predetermined optimum angular acceleration assigned to said relative rotary speed;
differentiation means connected to said sensing means for generating a monitoring signal proportional to a gradient of said relative rotary speed calculated as a differential quotient thereof with respect to time;
comparison means with input connections to said computer means and to said differentiation means for emitting an error signal generally proportional to any deviation of said monitoring signal from said reference signal during progressive interengagement of said members; and
electronic control means connected between said comparison means and said flow-regulating means for modifying a

pressure of said hydraulic fluid in response to said error signal to reduce said deviation, said computer means being programmed to subdivide a range of relative rotary speeds between an initial maximum and zero into a plurality of subranges in which said angular acceleration varies substantially linearly at different rates, with a smooth transition of said relative rotary speed from one subrange to the next and a single change of sign of the time differential of said angular acceleration between the next-to-last subrange and the last subrange at the zero end of said range.

4,485,444

RETARDER BRAKE AUTOMATIC CONTROL SYSTEM

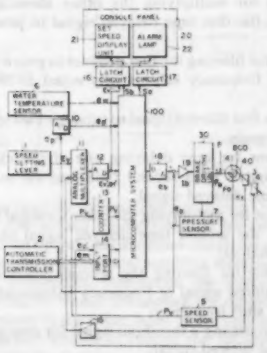
Yasuhiro Maruyama, Hiratsuka; Takaichi Saigo, Isehara; Sakae Tanahashi, Hiratsuka, and Yoshihei Masai, Zama, all of Japan, assignors to Kabushiki Kaisha Komatsu, Tokyo, Japan

Filed Dec. 1, 1981, Ser. No. 326,370

Claims priority, application Japan, Dec. 4, 1980, 55-171236; Dec. 4, 1980, 55-171237; Dec. 4, 1980, 55-171238; Dec. 4, 1980, 55-171239

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—426 **11 Claims**



1. A retarder brake automatic control system for causing a vehicle, having an automatic transmission controller for automatically shifting transmission stages corresponding to the speed of the vehicle, to run downhill at a set speed by driving a retarder brake based on a set speed command which is set by speed setting means when the vehicle runs downhill using an engine brake, said system comprising:

fault detecting means for detecting abnormality in at least one predetermined engine parameter during downhill operation of the vehicle, and

temporary set speed command generating means for generating a temporary set speed command corresponding to a transmission stage which is one stage lower than the transmission stage of said automatic transmission controller corresponding to the set speed command, causing said retarder brake to be driven based on the temporary set speed command in place of the set speed command at the time of fault detection when an abnormality is detected by said fault detecting means.

4,485,445

METHOD OF BRAKING A VEHICLE HAVING A WHEEL ANTI BRAKE-LOCK OR ANTI-SKID SYSTEM

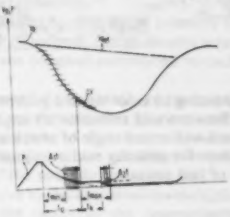
Volker Braschel, Heilbronn, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 427,184

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1982, 3201929

Int. Cl.³ B60T *8/08*

U.S. Cl. 364—426 **7 Claims**



1. Method of braking a vehicle having a wheel anti brake-lock or anti-skid system in which, upon sensing of a tendency of a wheel to slip upon application of brake pressure, by sensing deceleration (v_R) of the wheel at a rate below a predetermined reference rate (v_{Ref}), the brake pressure is decreased, including the steps of

sensing wheel deceleration, in speed steps, or speed intervals (Δv);

counting the number of speed intervals or steps (Δv) which are passed upon wheel deceleration;

controlling the duration of decrease of braking pressure as a function of said counted number of speed intervals (Δv),

and further comprising, in accordance with the invention, the steps of

defining a predetermined minimum time (t_{min}) for the duration of decrease of braking pressure after the wheel speed (v_R) drops below the reference speed (v_{Ref}) by a predetermined amount, for the duration of decrease of braking pressure, and decreasing braking pressure during said predetermined minimum time;

defining a plurality of first control time intervals (Δ_{1i});

and selecting a predetermined number of said first control timing intervals in dependence on the number of steps or speed intervals (Δv) which were sensed to provide a total braking pressure decrease time (t_a) which is the sum of said predetermined minimum time (t_{min}) and said number of first control timing intervals (Δ_{1i}) based on the number of steps, or speed intervals which were sensed.

4,485,446

AIRCRAFT LIFT CONTROL SYSTEM WITH ACCELERATION AND ATTITUDE LIMITING

Alessandro P. Sassi, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 8, 1981, Ser. No. 299,901

Int. Cl.³ G06G *7/78*

U.S. Cl. 364—435 **5 Claims**

1. Apparatus for producing an aircraft vertical path guidance signal α_{REF}, the apparatus comprising:

means for providing a signal $\dot{h}$ representative of aircraft vertical velocity;

means for providing a signal a_x representative of aircraft longitudinal acceleration;

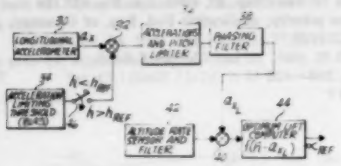
processing means for processing said a_x signal and producing a signal a_{xL};

combiner means for predeterminedly combining said $\dot{h}$ signal with said a_{xL} signal;

lift computer means for producing a reference lift angle of

attack signal α_{REF} as a predetermined function of said combined $\dot{h}$ and a_{xL} signals;

means for providing a signal α representative of said aircraft's actual angle of attack;



means for producing an error signal α_E corresponding to the difference between said reference lift angle of attack signal α_{REF} and said actual angle of attack signal α; and

utilization means for utilizing said α_E signal to control the flight path of said aircraft.

4,485,447

METHOD AND ARRANGEMENT FOR REGISTRATION OF PRINT ON A MATERIAL

Sylve J. D. Ericsson, Tumba, Sweden, assignor to Svecia Silkscreen Maskiner AB, Norsberg, Sweden

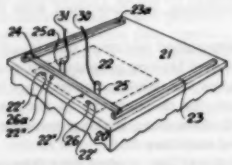
Continuation of Ser. No. 142,883, Apr. 22, 1980, abandoned. This application Jul. 26, 1982, Ser. No. 401,656

Claims priority, application Sweden, Apr. 23, 1979, 7903516

The portion of the term of this patent subsequent to Oct. 7, 1997, has been disclaimed.

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—469 **20 Claims**



1. A method of adjusting a print made in a printing machine on a material for substantial correspondence in relation to a reference pattern, comprising the steps of:

(a) applying the reference pattern serving as an original to a registering table separate from the printing table and provided with first registering means for registering the reference pattern, the first registering means corresponding to second registering means on the printing machine,

(b) scanning the reference pattern formed on the original to locate predetermined marks with at least one scanner,

(c) recording position values for the marks obtained from the at least one scanner,

(d) applying said print in the printing machine to a material registered by the second registering means in the printing machine,

(e) applying the material, printed according to "d", to the first registering means of the registering table,

(f) scanning the material which is printed according to "d" to locate marks on the print corresponding to the predetermined marks on the reference pattern with the at least one scanner,

(g) recording position values for the marks on the print obtained from the at least one scanner,

(h) comparing the position values obtained in "c" and "g";

(i) determining any deviation between the marks on the reference pattern and the print with respect to a numerical value and direction,

(j) determining displacement values from the determined deviation which values are appropriate for compensating for the deviation to apply a subsequent print substantially exactly to a further material in relation to the reference pattern, and

(k) evaluating the displacement values and deriving adjustment values which are supplied to a plurality of adjusting devices to compensate for the deviation.

4,485,448

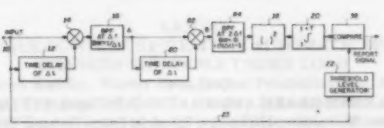
APPARATUS AND METHOD FOR DETECTING THE ONSET OF A FREQUENCY SHIFT KEYED SIGNAL

Richard R. Kurth, Sudbury, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Feb. 26, 1982, Ser. No. 352,677

Int. Cl.³ H03D *3/06*

U.S. Cl. 364—484 **22 Claims**



1. An apparatus for detecting the presence in an incoming signal of a frequency-shift-keyed signal of known shift frequency, key rate, and key period that comprises

means for dividing the incoming signal to produce two identical incoming signals;

first means for time delaying one of the identical incoming signals by a first time interval and for providing a first time delayed signal;

first means for multiplying the other identical incoming signal by the first time delayed signal to produce a first product;

first means for filtering the first product to pass a first filtered signal of frequency substantially equal to the shift frequency;

dividing the first filtered signal to produce two identical first filtered signals;

second means for time delaying one of the identical first filtered signals by a second time interval to produce a second time delayed signal;

second means for multiplying the other identical first filtered signal by the second time delayed signal to produce a second product;

second means for filtering the second product to pass a second filtered signal of frequency substantially equal to twice the shift frequency;

means for producing a threshold signal for comparison with the second filtered signal;

means for providing a report signal indicating the presence of the frequency-shift-keyed signal when the second filtered signal exceeds the threshold signal; and

means for producing no report signal indicating the absence of the frequency-shift-keyed signal when the second filtered signal does not exceed the threshold signal.

4,485,449

METHOD AND APPARATUS FOR THE DIRECT MEASUREMENT OF THERMAL ENERGY TRANSFERRED BY A FLUID MEDIUM

Uwe Knauss, Feldkirchen, Fed. Rep. of Germany, assignor to Cazzaniga S.p.A., Milan, Italy

Filed Feb. 1, 1982, Ser. No. 344,542

Claims priority, application Italy, Sep. 23, 1981, 24091 A/81

Int. Cl.³ G01K *17/06*; G01F *1/86*

U.S. Cl. 364—510 **11 Claims**

1. An apparatus for the direct measurement of thermal energy transferred in a heat exchanger by a fluid medium passing through fluid outflow tubing to the heat exchanger and passing

through fluid return tubing from the heat exchanger, comprising:

an outflow temperature sensor for sensing the temperature of fluid in the outflow tubing;

a return temperature sensor for sensing the temperature of fluid in the return tubing;

a flow meter for sensing the volume of fluid flow through the heat exchanger and including an impulse generator for generating an electric impulse every time that a predetermined volume of fluid passes through the heat exchanger;

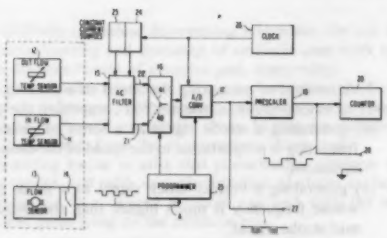
a programmer connected to the impulse generator and responsive to each electric impulse therefrom for generating first and second successive timing intervals;

first switch means operated by said programmer during the first timing interval;

said first switch means including an output, normally closed contact means for connecting one of the temperature sensors to the first switch means output when the first switch means is not operated, and normally open contact means for connecting the other temperature sensor to the first switch means output when the first switch means is operated;

a clock generator;

an analog-to-digital converter operated by the programmer and including (a) an operational amplifier integrator circuit with an integrating capacitance and a pair of inputs, (b) zero reference setting means having a reference voltage capacitance connected to one of the inputs of the operational amplifier integrator circuit and second switch



means operated by the programmer during the absence of the first and second timing intervals for connecting an output of the operational amplifier integrator circuit to the one input of the operational amplifier integrator circuit to produce a reference voltage on the reference voltage capacitance, (c) means connecting the output of the first switch means to the other input of the operational amplifier integrator circuit to charge the integrating capacitance during the first timing interval in accordance with a difference between the temperature sensed by the outflow and return temperature sensors, (d) constant current means, (e) third switch means operated by the programmer for connecting the constant current means to the other input of the operational amplifier integrator circuit during the second timing interval to discharge the integrating capacitance at a constant rate, and (f) gate means enabled in response to the output of the operational amplifier integrator circuit during the second interval corresponding to the discharge time for the charge made on the integrating capacitance during the first timing interval to pass clock pulses from the clock generator; and

counting means connected to the gate means for counting the number of pulses passed therethrough to indicate the quantity of energy transferred to the heat exchanger.

4. An apparatus for the direct measurement of thermal energy transferred in a plurality of heat exchangers by a fluid medium passing through fluid outflow tubings to the heat exchangers and passing through fluid return tubings from the heat exchangers, comprising:

a plurality of thermal energy meters for the respective heat exchangers wherein each meter has an output on which is produced pulses having a frequency proportional both to the volume of flow of the fluid medium through the respective heat exchanger and to the difference between the temperature of the fluid in the respective outflow tubing and the temperature of the fluid in the respective return tubing;

multiplexer means for scanning voltage levels on the outputs from the thermal energy meters at a rate such that several complete scans are made over the duration of each pulse from the energy meters;

a memory including a plurality of counters which is twice the plurality of thermal energy meters wherein a respective pair of the counters correspond to each thermal meter;

sequencing means for sequentially addressing the plurality of counters in correspondence to the multiplexer means wherein each pair of counters corresponding to each thermal energy meter are addressed at different times in operation of the multiplexer means; and

means responsive to the output of the multiplexer means for advancing the count in the corresponding addressed counter by one for each pulse generated on the corresponding output of the thermal energy meter.

4,485,450

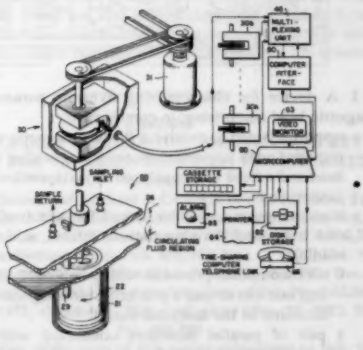
MONITORING BUILD-UP OF FOULING DEPOSITS ON SURFACES OF FLUID HANDLING SYSTEMS

William G. Characklis, and Frank L. Roe, both of Bozeman, Mont., assignors to Bridger Scientific, Inc., Bozeman, Mont.

Filed Jan. 12, 1982, Ser. No. 338,972

Int. Cl.[3] **G01N** *11/14;* **G06F** *15/46*

U.S. Cl. 364—550 **5 Claims**



1. An instrument for monitoring the build-up of fouling deposits on the fluid-contacting surfaces of fluid handling systems comprising, in combination:

a fouling cell having a cylindrical rotor adapted for rotation on its axis within an annular cylindrical casing;

means to flow fluid from the fluid handling system under investigation through the said fouling cell;

means to rotate said rotor at a selected rotational speed, thereby inducing a corresponding sheering stress in the fluid under investigation;

said means to flow fluid being supported by and rotating with said cylindrical rotor and comprising, further, means to cause the fluid to flow longitudinally along the annular space between said cylindrical rotor and said annular cylindrical casing;

means to sense the actual rotational speed of said rotor and to sense the torque required to drive said rotor said actual rotational speed and to emit corresponding electrical signals in response to the sensing;

means to feed said emitted signal to a computer for decoding

said signals into machine-language signals representing the actual rotational speed and torque sensed;

means, including program means, in said computer for manipulating said machine language signals to supply and display information as to the actual rotational speed and the torque required.

4,485,451

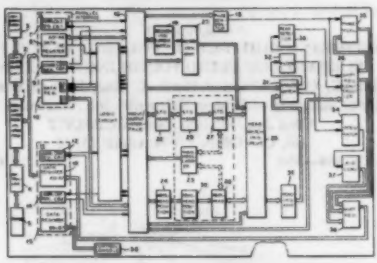
SYSTEM FOR MONITORING DYNAMIC PARAMETERS OF MAGNETIC HEADS

Dobromir A. Dyakov; Petko V. Kodjabashev; Pejo Stanchev; Dimiter L. Kirov; Jivko J. Zelezov, all of Sofia; Atanas T. Atanassov, and Krestyu N. Yanev, both of Stara Zagora, all of Bulgaria, assignors to Obedineni Zavodi Za Zapametyavashti Ustroystva, Stara Zagora, Bulgaria

Filed Jan. 28, 1982, Ser. No. 343,699

Int. Cl.[3] **G06F** *15/20, 11/16;* **G11C** *5/08*

U.S. Cl. 364—551 **9 Claims**



1. A device for characterizing dynamic parameters of a magnetic head comprising, in combination;

a support adapted to receive a flexible magnetic carrier and provided with respective means for mounting a standard head and a head to be analyzed in juxtaposition with said carrier; and

a microcomputer-controller circuit for selectively exciting said heads and deriving data therefrom, said circuit including:

a microcomputer provided with a keyboard for controlling said circuit and a printer for printing out data characteristic of the analyzed head,

a pair of parallel interfaces connected with said microcomputer,

an input/output interface connected with said parallel interfaces and with means for positioning said heads with respect to said carrier and with control circuits for recording and reading onto and from said carrier with said heads,

a logic circuit between said parallel interfaces and said input/output interface for exchanging control signals between said parallel interfaces and said input/output interface,

a head switching circuit for switching between said heads for routing information derived therefrom, and

a shift register circuit controlled by said input/output interface for routing data from said head-switching circuit and said heads to said microcomputer for printing out thereby, whereby said printer prints out a certificate as to the performance of an analyzed head and upon detection of a defect, said standard head is activated to respond to said carrier and determine whether said defect is an artifact of said carrier.

4,485,452

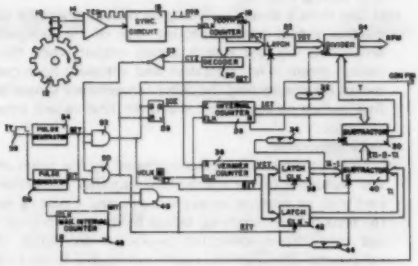
SPEED MEASUREMENT SYSTEM

Richard W. Cording, Mishawaka, and John C. Teager, Jr., South Bend, both of Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 22, 1982, Ser. No. 360,549

Int. Cl.[3] **G01P** *3/48;* **G01R** *23/02*

U.S. Cl. 364—565 **9 Claims**



1. A method of measuring the speed of a rotating element over an extended range, the method comprising the steps of:

(a) generating a strobe signal as a series of pulses whose frequency is proportional to the speed of the element to be measured;

(b) generating a vernier clock signal as a series of pulses whose frequency is much higher than the frequency of said strobe signal;

(c) generating an initial iteration interval IT(0) as a predetermined period of time asynchronously to the strobe signal;

(d) counting the number of vernier clock pulses between the start of the initial iteration interval and the last previous strobe pulse to form a previous time interval;

(e) counting the number of vernier clock pulses between the start of the initial iteration interval and its end to form an interval count;

(f) counting the number of strobe pulses occurring within the initial iteration interval to form a tooth count;

(g) generating an additional iteration interval equal to the first if no strobe pulses have been counted in either said initial interval or any of such additional intervals, otherwise skipping steps h–j;

(h) counting the number of strobe pulses occurring within said additional iteration interval and adding them to said tooth count;

(i) counting the number of vernier clock pulses occurring within said additional iteration interval and adding them to said interval count;

(j) repeating step g;

(k) counting the number of vernier clock pulses between the end of the last iteration interval and the last previous strobe pulse to form a subsequent interval;

(l) forming a total time interval by adding said previous interval to said internal count and subtracting said subsequent interval from said interval count; and

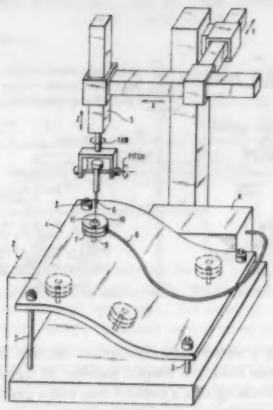
(m) dividing said tooth count by said total time interval to generate an RPM signal proportional to the speed of the measured element.

4,485,453

DEVICE AND METHOD FOR DETERMINING THE LOCATION AND ORIENTATION OF A DRILLHOLE

Russell H. Taylor, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1982, Ser. No. 363,211
Int. Cl.[3] G01B 5/20
U.S. Cl. 364—571 24 Claims



1. A drillhole centerline determining interposer, for use in robot probe locating and orienting of drillhole axes with respect to the coordinates of a master part, comprising:

(a) a planarization platform having a continuous platform surface defining a platform plane, with a central physical feature with a characteristic shape having an included point derivable from the characteristic shape; and

(b) mounting means to affix said planarization platform to the master part with said planarization platform surface orthogonal to a desired drillhole axis and with the included point lying on the drillhole axis.

4,485,454

ELECTRONIC DOCUMENT INFORMATION FILING SYSTEM

Katsumi Kimoto, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 2, 1981, Ser. No. 317,427
Claims priority, application Japan, Nov. 5, 1980, 55-155472
Int. Cl.[3] G06F 7/28
U.S. Cl. 364—900 16 Claims

1. A document information filing system for filing and retrieving a plurality of documents, said system comprising:

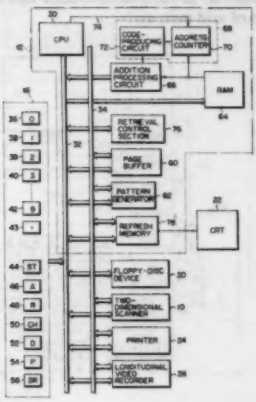
recording means for recording plural pieces of document picture information for each one of said plurality of documents and plural pieces of file structure data, which correspond to said plural pieces of document picture information, each of said plural pieces of file structure data comprising first and second data units, said first data unit including a plurality of first codes, which are set by an operator to identify one of said plurality of documents when said one document is registered in said document information filing system, and said second data unit including a plurality of second codes indicative of a recording location of said plural pieces of document picture information in said record means;

input means for inputting at least one arbitrary code of said plurality of first codes for retrieving one of said plurality of documents;

first retrieval means, connected to said recording means and input means, for selecting all of those first data units which include said at least one arbitrary first code, input by said input means;

indication means, connected to said first retrieval means, for receiving said selected first data units and visually indicating, in a one-to-one relation, each one of said selected first data units together with one of said plurality of second codes; and

second retrieval means, connected to said recording means



and input means, for reading out from said recording means, when at least one of said plurality of second codes is designated, that piece of said file structure data which includes said first data unit corresponding to said designated second code, and for retrieving from said recording means, based on said second data unit included in said read-out file structure data, that document picture information which corresponds to said read-out file structure data.

4,485,455

SINGLE-CHIP SEMICONDUCTOR UNIT AND KEY INPUT FOR VARIABLE FUNCTION PROGRAMMED SYSTEM

Gary W. Boone, and Michael J. Cochran, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

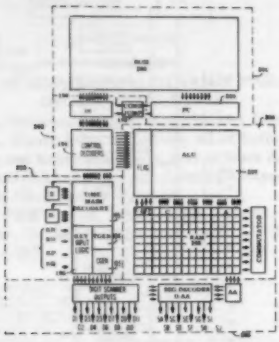
Division of Ser. No. 002,814, Jan. 12, 1979, Pat. No. 4,326,265, which is a division of Ser. No. 856,932, Dec. 2, 1977, Pat. No. 4,242,675, which is a continuation of Ser. No. 420,999, Dec. 3, 1973, abandoned, which is a continuation of Ser. No. 163,565, Jul. 19, 1971, abandoned. This application Mar. 18, 1982, Ser. No. 359,556
The portion of the term of this patent subsequent to Feb. 14, 1995, has been disclaimed.
Int. Cl.[3] G06F 3/02, 3/147, 9/00, 13/00
U.S. Cl. 364—900 10 Claims

1. An electronic system comprising an electronic processor device constructed as a single integrated semiconductor unit, and manual input means for entering information into the system; including:

(a) addressable storage means in said unit for storing fixed program instructions to control the operation of the system; and addressable storage means comprising a read-only-memory programmed to provide one of a variety of different system functions due to the selection of the program instructions which are fixed in said read-only-memory; addressing means for said addressable storage means to address sequences of said program instructions;

(b) control means in said unit coupled to said addressable storage means and responsive to said program instructions for generating control signals in accordance with said program instructions;

(c) data memory means in said unit for storing in bit-parallel format a plurality of multi-bit words of coded information;
(d) bit-parallel arithmetic-logic means in said unit coupled to said control means and to said data memory means for performing bit-parallel arithmetic and/or logic operations on said multi-bit words in accordance with said control signals to provide resulting answers;
(e) the manual input means inlcuding a plurality of key means external to the semiconductor unit and coupled to an input of said unit; and



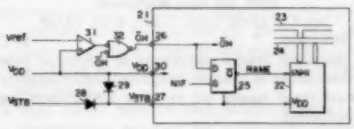
(f) said semiconductor unit including key-responsive means coupled to said input of said unit and also receiving control signals from said control means in accordance with certain program instructions for sequentially detecting the state of each key means and said addressing means responding to operation of said key-responsive means to alter the sequence of program instructions when one of the key means is activated.

4,485,456

DATA PROCESSOR WITH R/W MEMORY WRITE INHIBIT SIGNAL

Shinjiro Toyoda, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 19, 1982, Ser. No. 369,359
Claims priority, application Japan, Apr. 21, 1981, 56-60128
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—900 **4 Claims**



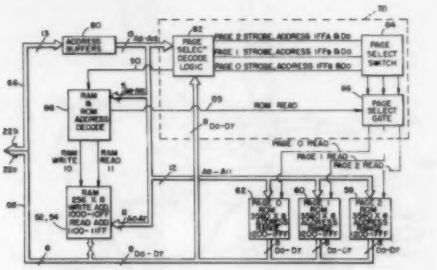
1. A data processor comprising:
an operation/halt signal input terminal;
means responsive to the operation/halt signal supplied to said input terminal for forming a write inhibit signal;
a read/write memory inhibited by the write inhibit signal from said signal forming means;
an auxiliary power source means for energizing said signal forming means and said read/write memory; and
means for comparing a main power source voltage with a reference value and forming the operation/halt signal.

4,485,457

MEMORY SYSTEM INCLUDING RAM AND PAGE SWITCHABLE ROM

Richard K. Balaska, Norwalk, Conn.; Robert L. Hunter, New York, N.Y., and Scott S. Robinson, Jr., Stamford, Conn., assignors to CBS Inc., New York, N.Y.

Filed May 31, 1983, Ser. No. 499,128
Int. Cl.³ G06F *9/00, 9/30*
U.S. Cl. 364—900 **8 Claims**



1. For use in a video game system or the like including a game address bus having a limited number of signal lines for conducting address signals, a control bus, and a game data bus, an integratable memory system comprising:
an address bus connectable to the game address bus of the game system for conducting address signals;
a data bus connectable to the game data bus of the game system for conducting data signals;
read only memory means coupled to said address bus and segmented into at least two pages each having a like first plurality of memory locations for providing digital signals on said data bus corresponding to data stored in selected memory locations in response to application thereto of a page select signal unique to the page, the memory locations being selected in response to first address signals on said address bus, and
first decoding means coupled to said address bus and to said data bus for providing the page select signal to a given page of said read only memory means in response to detection of a predetermined combination of first address signals on said address bus and a predetermined combination of data signals on said data bus;
random access memory means coupled to selected ones of the signal lines of said address bus and to said data bus and having a second plurality of memory locations for either accepting digital signals from said data bus or providing digital signals to said data bus corresponding to data stored in selected memory locations in response to the application thereto of either a Write control signal or a Read control signal, respectively, and
second decoding means coupled to the remaining ones of the signal lines of said address bus and to said random access memory means, including means for generating and providing a Write control signal to said random access memory means in response to detecting a first predetermined combination of address signals on the said remaining address lines and providing a Read control signal to said random access memory means in response to detection of a second predetermined combination of address signals on the said remaining address lines, and Write and Read control signals respectively designating whether information is to be written to or read from a memory location of said random access memory means addressed by an address signal on the selected ones of the address lines of said address bus.

4,485,458

CASSETTE-TYPE MAGNETIC BUBBLE MEMORY DEVICE

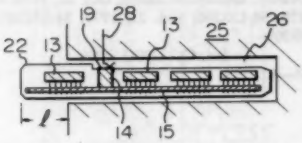
Toshiaki Sukeda, Suzaka; Harumi Maekawa, Kawasaki, and Sakan Takai, Suzaka, all of Japan, assignors to Fujitsu Limited, Tokyo, Japan

Filed Jun. 17, 1981, Ser. No. 274,543

Claims priority, application Japan, Jun. 20, 1980, 55-82801; Jun. 20, 1980, 55-85573[U]; Jun. 20, 1980, 55-85574[U]

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—1 9 Claims



1. A magnetic bubble cassette, having a case with a front end, a rear end and peripheral walls, the front end being insertable into an external apparatus, the cassette comprising: a bubble memory device mounted on a printed circuit board in the caase and a connector means having a portion for connecting said bubble memory device to the external apparatus for driving said bubble memory device, wherein the connecting portion of said connector means that is connected to the external apparatus is arranged on a peripheral wall parallel to the insertion direction of said cassette into said external apparatus.

4,485,459

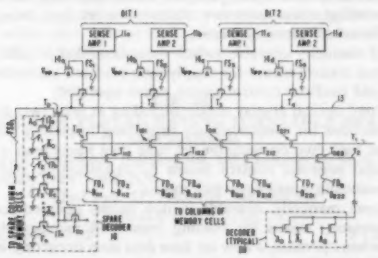
REDUNDANT COLUMNS FOR BYTE WIDE MEMORIES

Kalyanasundaram Venkateswaran, San Jose, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Sep. 20, 1982, Ser. No. 420,200

Int. Cl.³ G11C *8/00*

U.S. Cl. 365—200 12 Claims



1. Apparatus for providing a spare column of memory cells in a byte wide memory wherein each byte includes n bits, each bit includes m sense amplifiers, and each sense amplifier has associated with it p columns of memory cells, the apparatus comprising:

a spare column of memory cells;

an electrically conductive line;

decoder means for switchably connecting the line to the spare column;

a first fusable connection between the spare column and the line;

m second fusable connections, each for selectively connecting the line and a corresponding one of the m sense amplifiers; and

p third fusable connections, each connected between a corresponding one of the p columns and the sense amplifier associated with that column.

4,485,460

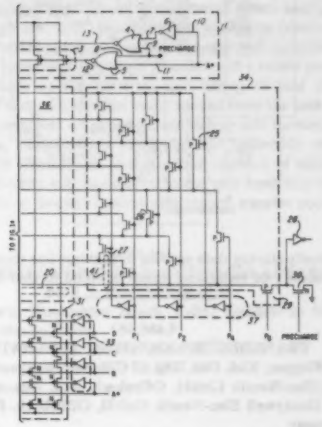
ROM COUPLING REDUCTION CIRCUITRY

Mark A. Stambaugh, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 10, 1982, Ser. No. 376,318

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—203 4 Claims



1. A read only memory comprising:

an array of rows and columns of memory cells formed with row lines and column lines associated with the array, the column lines being partitioned in a first and second addressable group, each group consisting of a plurality of column lines;

row select means for receiving an address signal to select a particular row and to connect the row line on one side of the selected row to a first voltage line and to connect the row line on the other side of the selected row to an output line;

column select means for receiving an address signal to connect an addressed column line to the first voltage line of an addressed group and to connect one or more of the remaining column lines of the main addressed group to a second voltage line; and

precharge means for precharging the row lines and the column lines prior to the connection of a row line to an output line.

4,485,461

MEMORY CIRCUIT

Satoru Kobayashi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

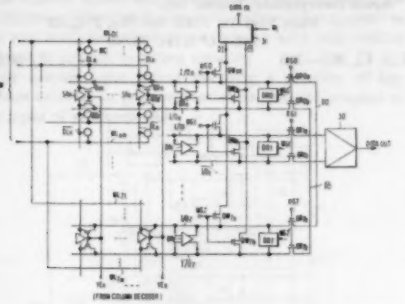
Filed Apr. 12, 1982, Ser. No. 367,523

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—239 11 Claims

5. A memory circuit, comprising; a plurality of memory cells arranged in a matrix of rows and columns, a first number of bus lines, row means for selecting one of said rows, a first column decoder for selecting a first number of said columns to be connected to said first number of said bus lines, a data line, a plurality of switching means coupled between said data line and said bus lines, a second column decoder for selecting one

of said switching means, and a plurality of data registers, each of said data registers being coupled to one of said bus lines and



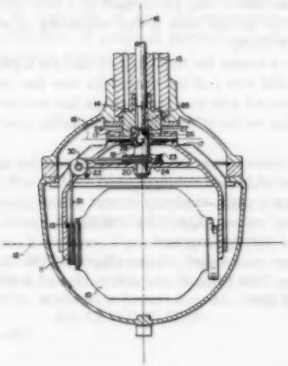
operatively storing data applied to that bus line through one of said plurality of switching means coupled to that bus line.

4,485,462

TRANSDUCER MOUNTING APPARATUS

Egon Wiegner, Kiel, Fed. Rep. of Germany, assignor to Honeywell Elac-Nautik GmbH, Offenbach, Fed. Rep. of Germany and Honeywell Elac-Nautik GmbH, Offenbach, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 426,534
Int. Cl.³ G01S 7/52
U.S. Cl. 367—12 **6 Claims**



1. Echo sounding apparatus of the type having a pendulously suspended frame rotatable about a vertical axis in which an electroacoustic transducer is mounted for tilting about a horizontal tilt axis, the tilt angle of the transducer being controllable by a generally vertical, rotatable tilt control shaft connected to rotate a first driving element coupled to the tilt shaft and mounted in the frame, and a second driving element for converting the rotation of the first driving element into tilting movement of the transducer, wherein the improvement comprises;

first pulley means rotatably coupled to said tilt control shaft and rotatable in said frame about a generally vertical axis;

second pulley means connected to said electroacoustic transducer for rotating said electroacoustic transducer about a first generally horizontal axis;

cable means coupling said first and second pulley means; and

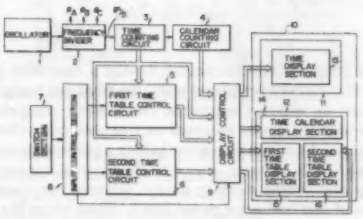
guide pulley means for converting movement of said cable means between horizontal and vertical directions, whereby rotation of said tilt control shaft about a vertical axis causes rotation of said electroacoustic transducer about a horizontal axis.

4,485,463

TIME DISPLAY DEVICE WITH MEANS FOR SELECTIVELY READING OUT A PLURALITY OF PREVIOUS SET TIMES

Kazunori Kita, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 197,269, Oct. 15, 1980, abandoned. This application Dec. 7, 1982, Ser. No. 447,525
Claims priority, application Japan, Oct. 22, 1979, 54-135205; Oct. 22, 1979, 54-135206; Oct. 22, 1979, 54-135207; Oct. 22, 1979, 54-135209
Int. Cl.³ G09G 3/04
U.S. Cl. 368—82 **17 Claims**



1. An electronic time display device for selectively displaying present time and a plurality of set time data items, comprising:

time counting means for generating present time data representing the present time;

first optical display means coupled to said time counting means for normally displaying the present time data generated by said time counting means;

memory means for storing a plurality of set time data items;

read-out control means coupled to said memory means for reading out at least two consecutive set time data items from said memory means;

first manually operable switch means coupled to said read-out control means for supplying a read-out instruction to said read-out control means, when operated;

second optical display means including at least two display sections for simultaneously displaying respective ones of at least two consecutive set time data items read out by said read-out control means by operation of said first manually operable switch means;

second manually operable switch means coupled to said memory means for reading from said memory means, when operated, a new set time data item occurring immediately after the at least two consecutive set time data items displayed by said second optical display means; and

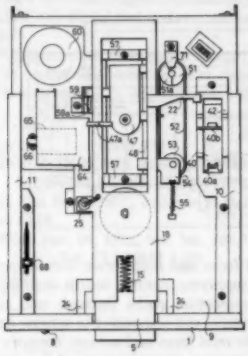
display control means coupled to said second optical display means for causing said second optical display means to shift the previously displayed consecutive set time data items by one set time item to thereby erase the first of the at least two consecutive set time data items which were displayed and move the display of the second of the at least two consecutive set time data items to the position at which said erased set time data item was displayed, when said new set time data item occurring immediately after these previously displayed consecutive set time data items is read out from said memory means by operation of said second manually operable switch means, and said display control means then causing displaying of said new set time data item newly read out from said memory means at one of the display sections of said second optical display means which became vacant due to said shifting of said previously displayed consecutive set time data items.

4,485,464

DOOR OPENING AND CLOSING MECHANISM FOR DISC DRIVING APPARATUSES

Motohiro Shimaoka, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 431,022
Claims priority, application Japan, Nov. 16, 1981, 56-184734
Int. Cl.[3] G11B *1/00*
U.S. Cl. 369—77.1 10 Claims



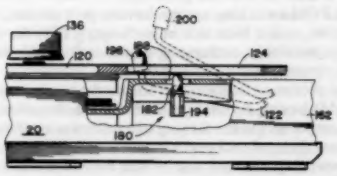
1. A door opening and closing mechanism for disc driving apparatuses comprising a chassis and a front panel having a rear surface, an elongate frame fastened pivotably at one end portion to said chassis and having means at the other end portion thereof for holding a door member, a door member consisting of an operating portion and a mounting portion slidably held in said holding means of said pivotable frame, means including a spring provided between said pivotable frame and said door member for constantly urging said door member against the rear surface of said front panel, an elongated opening provided in said front panel for receiving a disc cartridge thereinto, recesses provided in said rear surface of said front panel, and means including projections provided on said operating portion of said door member and adapted to be fitted within said recesses for holding said door member across said elongated opening.

4,485,465

VIDEO DISC PLAYER HAVING TURNTABLE BRAKE MECHANISM

Thomas F. Kirschner, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,533
Int. Cl.[3] G11B *17/00, 1/00, 19/10*
U.S. Cl. 369—77.2 5 Claims



1. In a record player having a record handling mechanism for transferring a record between a rotatable turntable and a set of record receiving pads located above said turntable; said record handling mechanism including a record transfer rod which is raised through a slot in said turntable to cause transfer of said record between said turntable and said receiving pads; said player further having means for driving said turntable during playback; said record transfer rod being lowered to a position below said turntable prior to turntable rotation; said player being provided with a mechanism for stopping said turntable at a location such that said slot is over said record transfer rod when said turntable drive means is turned off, so that said record transfer rod can be raised through said slot for record lifting and lowering; said turntable having a tendency to bounce against said record transfer rod when said rod is raised through said slot; turntable brake apparatus comprising:

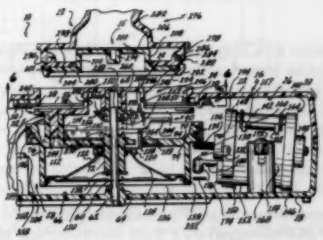
a member mounted in said player beneath said turntable for motion between a depressed position and a raised position in response to the lowering and lifting of said record transfer rod; said member being spaced from the underside of said turntable when depressed to free said turntable for rotation, said member engaging said underside of said turntable when raised to oppose the rotation of said turntable, thereby substantially reducing said tendency of said turntable to bounce against said record transfer rod.

4,485,466

STYLUS SHIELDING AND UNSHIELDING APPARATUS FOR A PHONOGRAPH

Ferenc Fekete, Huntington Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 5, 1983, Ser. No. 455,689
Int. Cl.[3] G11B *3/40*
U.S. Cl. 369—177 9 Claims



1. In combination with a phonograph of the type which includes a housing having an opening for receiving a recorded-message carrier, a turntable rotatably mounted in said housing in alignment with said opening, a tonearm pivoted to said turntable for rotation thereby and a reproducing stylus extending upwardly from said tonearm for engaging said recorded-message carrier when it is in position within said opening, the improvement which comprises:

means for automatically shielding said stylus from access through said opening when said recorded-message carrier is removed from said opening; and

means for automatically unshielding said stylus when said recorded-message carrier is positioned within said opening.

4,485,467

DIGITAL INFORMATION SWITCH MATRIX WITH ON-LINE/OFF-LINE DIAGNOSTIC FEATURES

Larry L. Miles, Garland, and John D. Meyers, Plano, both of Tex., assignors to Teknekron Infoswitch Corporation, Richardson, Tex.

Filed Feb. 18, 1982, Ser. No. 350,096
Int. Cl.[3] H04J *3/14*
U.S. Cl. 370—14 8 Claims

1. A switching system including redundant on-line/off-line switch matrices both electrically connected to a PCM (pulse code modulated) data bus for providing time slot interchange switching, and including a diagnostic processor executing a

diagnostic program for controlling and implementing the diagonostic functions for each switch matrix, each switch matrix comprising:

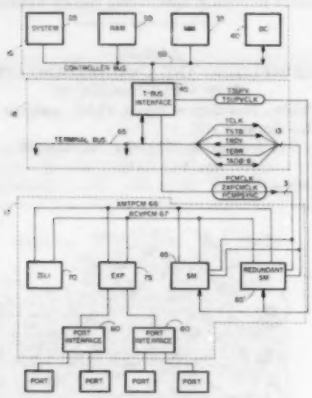
(a) switching means for performing time slot interchange switching of input PCM data;

(b) inject and monitor means responsive to diagnostic instructions from the diagnostic processor to test the time slot interchange function of said switching means by:

(i) injecting, in selectable unused time slots, predetermined PCM/inject data for the input PCM data in that time slot, the input PCM data in the other time slots being unaffected;

(ii) implementing the time slot interchange process for those time slots containing PCM/inject (interchanged) data; and

(iii) monitoring the PCM/inject (interchanged) data from said switching means so as to detect any malfunction in the time slot interchange switching function;



(c) output driver means for transmitting PCM and PCM/inject (interchanged) data from said switching means to a PCM bus, said driver means being selectively enabled or disabled in each time slot in accordance with a predetermined out-enable signal such that the switch matrix remains electrically connected to the PCM bus in all time slots but does not transmit PCM/inject (interchanged) data in those time slots in which it is disabled; and

(d) out-enable control means responsive to diagnostic instructions from the diagonostic processor to provide a predetermined out-enable signal to selectively enable/disable said output driver;

(e) such that the output driver for an on-line switch matrix is selectively enabled while the output driver for an off-line switch matrix is selectively disabled for each time slot in a predetermined shared manner.

4,485,468

CONTROL WORD GENERATION METHOD AND SOURCE FACILITIES FOR MULTIRATE DATA TIME DIVISION SWITCHING

Matthew F. Slana, Naperville, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 1, 1982, Ser. No. 364,258

Int. Cl.[3] H04J *3/06*

U.S. Cl. 370—58 **17 Claims**

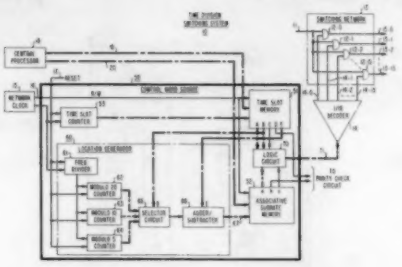
1. A control word source for supplying control words defining nonsubrate and subrate data communication paths through a time division switching system comprising

subrate memory means having a plurality of locations for storing subrate data path-definition words,

nonsubrate and reference memory means for storing nonsubrate data path-definition words and storage reference words,

circuit means responsive to storage reference words read from said nonsubrate and reference memory means for defining said subrate memory means locations to effect a reading of said subrate data path-definition words and

logic means responsive to nonsubrate data path-definition



words read from said nonsubrate and reference memory means for supplying control words defining nonsubrate data communication paths through said time division switching system and responsive to subrate data path-definition words read from said subrate memory means locations for supplying control words defining subrate data communication paths through said time division switching system.

4,485,469

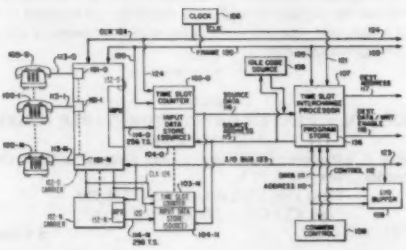
TIME SLOT INTERCHANGER

Ronald K. Witmore, Lafayette, Colo., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 30, 1982, Ser. No. 413,155

Int. Cl.[3] H04J *3/00*

U.S. Cl. 370—68 **20 Claims**



1. In a PCM switching system having port circuits, associated stations, and a time slot interchanger (TSI) for serving calls by controllably exchanging digital call signals between said port circuits, said TSI comprising:

a signal processor including an accumulator memory means (RAM) having a plurality of addressable locations,

means responsive to the serving of a conference call between at least three of said port circuits (conferee port circuits) for assigning a unique one of said RAM locations to said conference call,

means for sequentially applying digital call signals to said signal processor from each of said conferee port circuits,

means including said signal processor responsive to the receipt of said digital call signals for forming a sum signal representing the sum of all of said digital call signals applied to said signal processor from said conferee port circuits,

means for entering said sum signal in said assigned RAM location,

means for sequentially applying digital call signals from each of said conferee port circuits sequentially to said signal processor while concurrently applying said sum signal to said signal processor from said RAM,

said signal processor being responsive to each concurrent receipt of call signals from a conferee port circuit and said sum signal from said RAM for forming for each conferee port circuit a difference signal representing the difference between said sum signal and said concurrently applied call signal, and

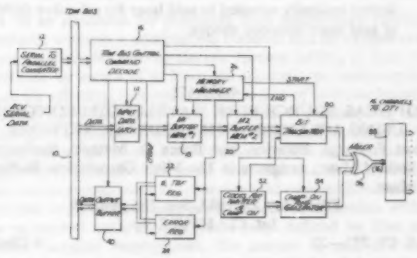
means for applying each one of said formed difference signals to the one of said conferee port circuits whose call signal is not contained in said difference signal.

4,485,470

DATA LINE INTERFACE FOR A TIME-DIVISION MULTIPLEXING (TDM) BUS

Peter A. Reali, San Jose, Calif., assignor to Rolm Corporation, Santa Clara, Calif.

Filed Jun. 16, 1982, Ser. No. 388,746
Int. Cl.³ H04J *3/06*
U.S. Cl. 370—100 **18 Claims**



1. A system for converting parallel data to serial format for application to a desired destination channel, comprising

bus means for receiving and transferring parallel data, address and command signals, said parallel signals including a stop bit for designating the end of a character;

control means coupled to said bus for receiving the address and command signals from said bus means and generating command signals in response to the signals from said bus means,

first memory means for receiving and storing the data from said bus means in response to a command from said control means,

second memory means for receiving and storing the data from said first memory means,

memory manager means coupled to said first and second memory means for regulating the flow of data from said first memory means to said second memory means in response to a signal from said control means,

bit transmitter means coupled to said second memory means for converting and retiming the parallel data received from said second memory means into a serial format,

bit sampling means for sampling said stop bit, said bit sampling means reading said stop bit during only a portion of said stop bit and causing said memory manager means to begin to input the start of another character to said bit transmitter, thereby allowing said bit transmitter to read said another character after only a portion of said stop bit,

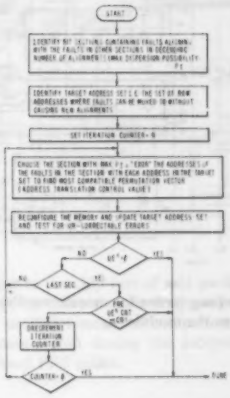
whereby the data from said bus means is converted to serial format and said stop bit is shortened in response to a command from said memory manager means wherein new parallel data can be immediately received from said second memory means such that an overflow of data does not occur.

4,485,471

METHOD OF MEMORY RECONFIGURATION FOR FAULT TOLERANT MEMORY

Shanker Singh, Fishkill, and Vijendra P. Singh, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 1, 1982, Ser. No. 383,640
Int. Cl.³ G06F *11/00*; G11C *13/00*
U.S. Cl. 371—2 **6 Claims**



1. In a memory system made up of logical data words each with bit positions accessed by the same logical address bits through separate permuting means which converts said logical address bits to actual address bits for a data bit on the basis of permutation bits that are selected to distribute faulty data bits among the logical data words, the method comprising:

comparing the actual address of each fault in each bit position with the logical address of a number of preferred word locations for placing a fault,

selecting the permutation bit which places the most faults in preferred word locations.

4,485,472

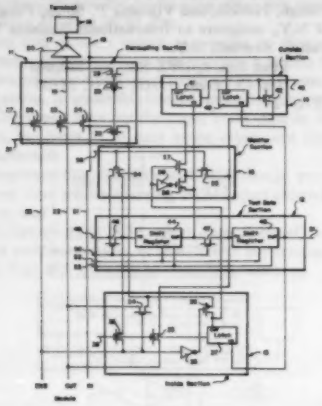
TESTABLE INTERFACE CIRCUIT

Robert Sproull, and Edward H. Frank, both of Pittsburgh, Pa., assignors to Carnegie-Mellon University, Pittsburgh, Pa.

Filed Apr. 30, 1982, Ser. No. 373,648
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—15 **17 Claims**

1. An interface testing circuit for connection between a terminal and a module of a digital system, comprising a decoupling section, a test data section, and one or more of the following sections; an inside section, an outside section and a monitoring section, the decoupling section comprising means, in a first state, for connecting the module to the terminal and in a second state, for connecting the interface circuit to the terminal and module, the test data section comprising means for storing test data destined for and received from the inside, outside, and monitor sections, or any one of them, means for connecting the storage means with those sections, and means for transmitting test data to and from external interface circuits and external test structures, the inside section comprising means for routing data stored in the test data section to the module, and routing data from the module to the test data section, the outside section comprising means for routing data

from the terminal into the test data section and for routing data from the test data section into the terminal, and the monitor



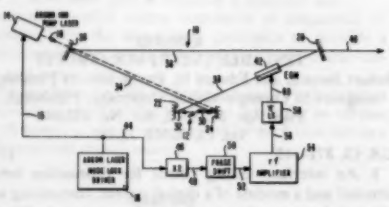
section comprising means for monitoring the terminal while it is connected to the module.

4,485,473

MODE LOCKING OF TRAVELLING WAVE RING LASER BY AMPLITUDE MODULATION

Chung L. Tang; Nils A. Olsson, and Jean-Marc Halbout, all of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Apr. 29, 1982, Ser. No. 373,078
Int. Cl.³ H01S *3/083*
U.S. Cl. 372—18 **15 Claims**



1. Apparatus for obtaining subpicosecond optical pulses from a laser, comprising:

a synchronously pumped laser located within a ring cavity and generating two counterpropagating optical pulses within said cavity;

an amplitude modulator assymetrically located in the optical path of said pulses within said ring laser; and

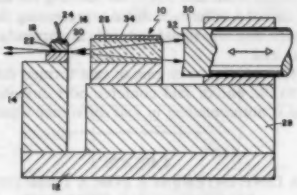
means for time varying said amplitude modulator in time synchronization with the generation of said two counterpropagating optical pulses to block a selected one of said two optical pulses and to thereby achieve mode locking, whereby short output pulses having a time duration of less than about 1 picosecond are obtained.

4,485,474

INJECTION LASER MODULATOR WITH EXTERNAL RESONATOR

Johann M. Osterwalder, Encinitas, Calif., assignor to General Dynamics/Electronics, San Diego, Calif.

Filed Dec. 10, 1981, Ser. No. 329,340
Int. Cl.³ H01S *3/10, 3/19*
U.S. Cl. 372—28 **17 Claims**



1. A high frequency modulating system for a laser comprising:

a laser,

bias means for said laser, and

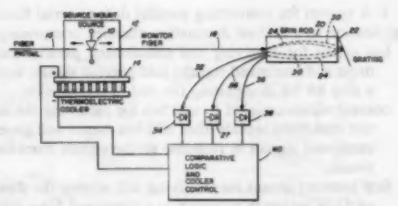
an external tunable resonator comprising an electro-optic device optically coupled to said laser for selective shifting of said laser between modes.

4,485,475

OPTICAL SOURCE PEAK WAVELENGTH CONTROL USING A WAVELENGTH FEEDBACK NETWORK

Scott F. Large, Billerica, and Bruce D. Metcalf, Burlington, both of Mass., assignors to The Mitre Corporation, Bedford, Mass.

Filed May 27, 1983, Ser. No. 498,659
Int. Cl.³ H01S *3/10*
U.S. Cl. 372—32 **6 Claims**



1. Apparatus for maintaining a desired output wavelength from an optical source whose output wavelength depends on the temperature of the source comprising:

a graded index of refraction lens/diffraction grating combination;

a monitor optical fiber for introducing a portion of the output of said source into said lens at an input location;

first, second and third output optical fibers located at first, second and third output locations on said lens, said first, second and third output optical fibers connected to first, second and third optical detectors, respectively;

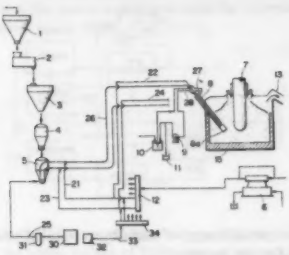
said second output optical fiber located between said first and third output optical fibers at a position to receive optical energy when said source generates said desired output wavelength and said first and third output optical fibers located to receive optical energy when said source generates an output wavelength which deviates from said desired wavelength; and

means for heating or cooling said optical source in response to a signal from said first or said third optical detector whereby said desired output wavelength is maintained.

4,485,476
APPARATUS AND PROCESS FOR PREPARING HIGH TEMPERATURE REACTION PRODUCTS

Toshihiko Nishimaki; Yoshikazu Nakaminato, and Katsuhiko Fujimoto, all of Oumi, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1983, Ser. No. 505,607
Claims priority, application Japan, Jun. 26, 1982, 57-110375
Int. Cl.³ H05B 11/00
U.S. Cl. 373—2 14 Claims



1. In an apparatus for preparing high temperature reaction products, wherein a combustible material and an oxygen-containing gas are fed into an electric furnace having at least one electrode by means of at least one suction-type water-cooled lance for effecting incomplete combustion of said combustible material and wherein the heat of reaction generated by said incomplete combustion is utilized for additional heat source for raising the temperature of the reaction zone in said furnace, an improved apparatus wherein the discharge end of said suction-type water-cooled lance for charging said combustible material and said oxygen-containing gas is opened at a position within the unreacted material deposition zone defined by first and second imaginal hemispheres, the centers of said first and second imaginal hemispheres being identical and located on the bottom of said electric furnace intersected by the extension of longitudinal center line of said electrode, the radius of said first imaginal hemisphere being substantially equal to the distance from the tip end of said electrode to the bottom face of said electric furnace, the radius of said second imaginal hemisphere being 1.5 times as long as the radius of said first imaginal hemisphere, wherein said discharge end of said suction-type water-cooled lance is maintained at a vertical position higher than the water level in a reservoir from which cooling water is supplied, and wherein said cooling water is recirculated by a suction pump interposed in the cooling water recirculation line at a position downstream of the cooling water outlet of said suction-type water-cooled lance.

4,485,477
FAST FREQUENCY/CODE SEARCH

Edward J. Nossen, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

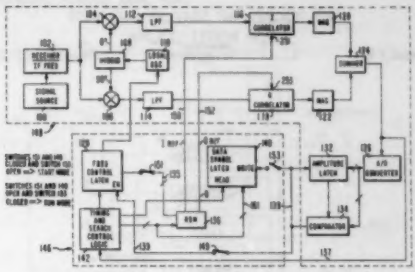
Filed Jul. 19, 1982, Ser. No. 399,879
Int. Cl.³ H04B 15/00
U.S. Cl. 375—1 5 Claims

1. In a decoder for decoding received pseudo random sequence (PRS) codes modulated upon a carrier signal, having an original chip rate f_c and an unknown frequency shift thereon, frequency compensating logic for compensating for said frequency shift to improve correlation of locally generated reference PRS codes of chip rate f_c with said received PRS codes and comprising:

means including local oscillating means for demodulating said carrier signal and detecting said received PRS codes;

means for generating X correction PRS codes each having a pattern of chips similar to the chip pattern of a predetermined one of said received PRS codes and each shifted in chip rate from f_c by amounts which will provide a spectrum of frequencies spanning any expected frequency shift of a received PRS code;

means for correlating each of said X correction PRS codes with a predetermined received PRS code at a rate f_x to determine which particular correction PRS code produces the greatest correlation signal, where $f_x >> f_c$; and

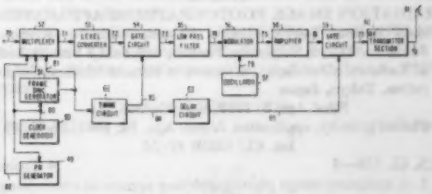


means responsive to the chip rate of said particular correction PRS code for correcting the frequency of the output of said local oscillator means to compensate for said unknown frequency shift during the reception of subsequently received PRS codes.

4,485,478
DIGITAL BURST SIGNAL TRANSMISSION SYSTEM

Masami Takada, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 28, 1982, Ser. No. 382,983
Claims priority, application Japan, Jun. 3, 1981, 56-85410
Int. Cl.³ H03C 1/06
U.S. Cl. 375—60 13 Claims



1. A digital burst signal transmission system comprising:

(a) first means for generating a first burst control signal synchronized with an input digital signal, and a second burst control signal having a pulse width larger than that of said first burst control signal;

(b) second means for gating said input digital signal in response to said first burst control signal to provide a step-wise digital burst signal;

(c) third means for frequency limiting said step-wise digital burst signal; and

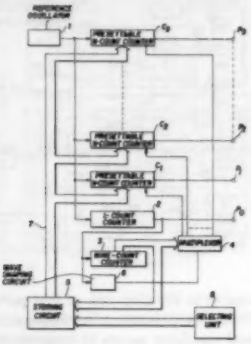
(d) fourth means for gating the frequency-limited digital burst signal in response to said second burst control signal to suppress the spectral spread of said frequency-limited digital burst signal, thereby providing a desired digital burst signal.

4,485,479

PHASE CONTROL DEVICE

Hiroshi Iino, Nishinomiya, and Tatsuo Hayashi, Amagasaki, both of Japan, assignors to Furuno Electric Co., Ltd., Nishinomiya, Japan

Filed Jul. 8, 1982, Ser. No. 396,530
Claims priority, application Japan, Jul. 23, 1981, 56-115961
Int. Cl.³ H03K *5/15*
U.S. Cl. 377—43 **4 Claims**



1. A phase control device comprising:

a. a pulse signal generator for producing pulses with a period,

b. storing means for storing numerical data,

c. a plurality of presettable N-count counters for counting the pulses from said pulse signal generator, each of said counters presetting the numerical datum supplied to the data input thereof from said storing means and producing an output pulse each time its count reaches N, and

d. reading means for reading out in a time divisional fashion predetermined numerical data and transmitting them to corresponding presettable N-count counters.

4,485,480

RADIATION IMAGE PHOTOGRAPHING APPARATUS

Hideki Kohno, Tokyo; Hidemi Shiono, Akikawa; Kensuke Sekihara, Tokyo; Shigenobu Yanaka, and Takaji Suzuki, both of Kashiwa, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Apr. 8, 1982, Ser. No. 366,781
Claims priority, application Japan, Apr. 10, 1981, 56-53145
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—4 **4 Claims**

1. A radiation-image photographying apparatus comprising:

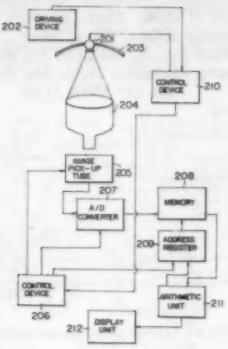
a radiation source;

a radiation detector disposed in opposition to said radiation source for detecting radiation through an object to be examined;

scanning means for changing the relative, positional relationship between said radiation source and said radiation detector with respect to said object and for obtaining a plurality of measurements of a two-dimensional radiation absorption distribution of said object with a fixed image detecting field while said scanning means is changing the relative positional relationship between said radiation source and said radiation detector;

memory means for storing the plurality of measurements; and

arithmetic means for arithmetically processing the output from said memory means; said arithmetic means performing a linear arithmetic operation on the plurality of measurments of said radiation passing a point within said object so as to provide an output representative of any



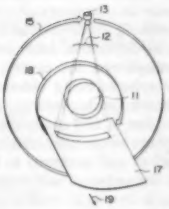
cross-sectional image of said object parallel to the plane of said radiation detector.

4,485,481

COMPUTED TOMOGRAPHIC METHOD

Masao Takano, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Filed Sep. 29, 1982, Ser. No. 428,064
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—19 **7 Claims**



1. A computed tomographic method in which a tomographic image of an object is composed from a plurality of X-ray projection distribution images obtained by exposing a section of the object to X-rays in a plurality of different directions, wherein the improvement comprises once storing the X-ray projection distribution images obtained by respective exposures to X-rays at positions different from one another on a stimulable phosphor sheet, scanning said stimulable phosphor sheet with a stimulating ray, and thereafter composing a tomographic image of the object by use of electric signals obtained by photoelectrically reading out light emitted from said stimulable phosphor sheet upon stimulation thereof.

4,485,482

APPARATUS FOR GENERATING A LASER PULSE

Olli Suominen, Espoo, Finland, assignor to OY Nokia AB, Helsinki, Finland

Continuation of Ser. No. 109,987, Jan. 7, 1980, abandoned. This application Jun. 24, 1982, Ser. No. 391,831
Int. Cl.³ H01S *3/091*
U.S. Cl. 372—70 **2 Claims**

1. A laser oscillator comprising:

a laser resonator having at one end an approximately 100% reflector and at the other end a partially transmissive reflector;

a laser rod positioned in said resonator, the material of said laser rod being selected and said reflectors being positioned such that

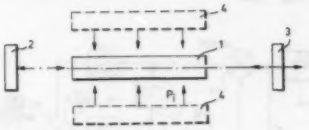
$t_c \leq 0.1\tau_{sp}$, and

$\tau_{sp}/(t_c a) > 10^4$,

wherein

t_c equals the average lifetime of a photon in the space between said two reflectors,

$a = 2 \times \frac{1}{4}\pi \times$ the space angle in which the stimulated emission takes place, and



τ_{sp} equals the lifetime of spontaneous emission; and

means for pumping pulses of light energy into said laser rod to produce stimulated radiation which increases in the direction of said reflectors, said means pumping said light energy until the amount of energy accumulated in said laser rod becomes sufficiently large so that a portion of said energy discharges through said partially transmissive reflector as a laser pulse having a substantially shorter length than said pumping pulse, said pumping power, P_b being greater than $W_T/t_c \times 1/(100 \ln(\tau_{sp}/at_c))$, wherein W_T is the energy accumulated in the laser material at the threshold level.

4,485,483

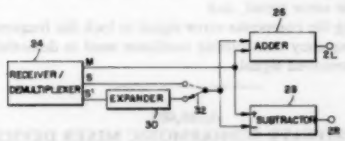
FM STEREOPHONIC SYSTEM INCORPORATING COMPANDING OF DIFFERENCE SIGNAL

Emil L. Torick, Morehouse La., Darien, Conn. 06820, and Thomas B. Keller, 6721 Clelia Ct., Springfield, Va. 22152

Filed Mar. 18, 1983, Ser. No. 476,738

Int. Cl.³ H04H 5/00

U.S. Cl. 381—14 **20 Claims**



10. For use in an FM radio transmission system, a transmitter compatible with conventional monophonic and two-channel stereophonic broadcasts and capable of improving the signal-to-noise ratio of a transmitted signal when received and processed at a remote receiver as compared to the conventional stereophonic FM system thereby to effectively extend the listening area beyond that reached by the conventional two-channel system and to provide a better than conventional signal quality throughout such larger area, said transmitter comprising:

means for combining independent stereophonically related audio frequency source signals L and R to obtain audio frequency sum and difference signals M and S respectively comprising (L+R) and (L−R),

means for compressing the dynamic range of said difference signal S to obtain a compressed difference signal S',

means for modulating each of two sub-carriers with a respective one of said difference signals S and said compressed difference signal S', and

means for modulating said sum signal M and the aforementioned modulated sub-carrier signals onto a high frequency carrier for the purpose of transmitting the same to one or more remote receivers.

4,485,484

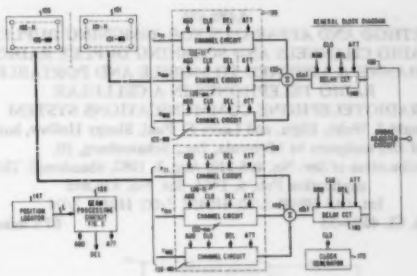
DIRECTABLE MICROPHONE SYSTEM

James L. Flanagan, Warren, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 28, 1982, Ser. No. 437,290

Int. Cl.³ H04M 1/20

U.S. Cl. 381—92 **19 Claims**



1. A signal processing arrangement for reducing audio interference in a reverberative environment comprising:

a plurality of directable beam forming electroacoustic transducer means;

means for steering the beam of each transducer means to a prescribed location in said environment; and

means responsive to the output signals of said directable beam forming transducer means for forming a signal corresponding to sounds emanating from a predetermined volume surrounding said prescribed location.

4,485,485

CHARACTER READING CAMERA

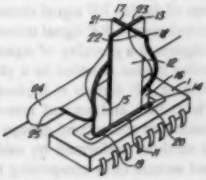
Russell P. Smith, 21 Muritai Ter.; Guy R. Dunlop, 157 Hamilton Ave., and Carol L. Miles, 108 Leinster Rd., all of Christchurch, New Zealand

Continuation-in-part of Ser. No. 163,994, Jun. 30, 1980, abandoned. This application Jul. 30, 1981, Ser. No. 288,543

Claims priority, application New Zealand, Jul. 2, 1979, 190885

Int. Cl.³ G06K 9/00

U.S. Cl. 382—65 **10 Claims**



1. A character reading camera which produces electrical signals representative of optical characters in an object plane scanned by the camera comprising:

a multi-element photo-sensor array,

a first optical system which receives light from said object plane through a linear aperture having a length substantially equal to at least character height and transmits the received line of light to a first group of photo-sensors in said array.

and a said optical system which receives a changing linear pattern of light, the changes in which are a function of the relative scanning motion between the camera and the object plane in a direction at right angles to said linear aperture, and transmits said pattern to a second group of photo-sensors in said array, the electrical outputs of a particular arrangement of elements in the first group of photo-sensors each being representative of the intensity of light in adjacent segments of the received line of light, and the electrical outputs of the elements in the second group of photo-sensors conveying scan motion information.

4,485,486

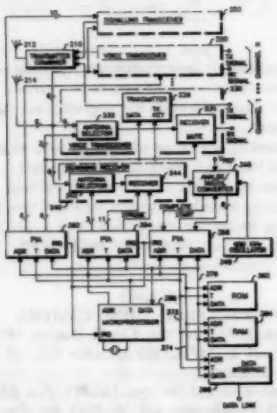
METHOD AND APPARATUS FOR ASSIGNING DUPLEX RADIO CHANNELS AND SCANNING DUPLEX RADIO CHANNELS ASSIGNED TO MOBILE AND PORTABLE RADIO TELEPHONES IN A CELLULAR RADIOTELEPHONE COMMUNICATIONS SYSTEM

Ronald J. Webb, Elgin, and Larry C. Puhl, Sleepy Hollow, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 405,210, Aug. 3, 1982, abandoned. This application Feb. 6, 1984, Ser. No. 576,805

Int. Cl.³ H04B *3/60*; H04M *7/00*; H04Q *7/04*

U.S. Cl. 455—33 **67 Claims**



18. A method of controlling radio frequency (RF) signal communications paths to remote stations of a communications system, said communications system including a plurality of cells partitioned from a geographical area; each cell allocated first and second groups of duplex RF signal channels, and each cell including cell control means, RF signal transmitting means for transmitting RF signals at a plurality of signal frequencies, and RF signal receiving means coupled to a plurality of antenna means for receiving RF signals at a plurality of signal frequencies; and at least first and second non-adjacent cells being allocated the same first and second groups of duplex RF signal channels; said method performed by said cell control means of said first and second cells comprising the steps of:

(a) at said first cell, assigning one of said first group of RF signal channels to a requesting remote station, and assigning one of said second group of RF signal channels to a requesting remote station when all RF signal channels of said first group have been assigned; and

(b) at said second cell, assigning one of said second group of RF signal channels to a requesting remote station, and assigning one of said first group of RF signal channels to a requesting remote station when all RF signal channels of said second group have been assigned.

4,485,487

METHOD OF, AND A RECEIVER FOR, DEMODULATING A DOUBLE SIDEBAND AMPLITUDE MODULATED SIGNAL IN A QUASI-SYNCHRONOUS AREA COVERAGE SCHEME UTILIZING SIDEBAND DIVERSITY

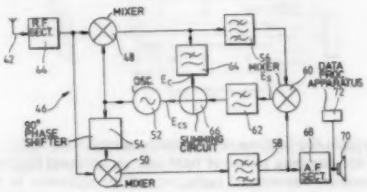
Graham Allen, Trowbridge, and Robert J. Holbeche, Bath, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 12, 1982, Ser. No. 377,633

Claims priority, application United Kingdom, May 26, 1981, 8116035

Int. Cl.³ H04B *1/26*

U.S. Cl. 455—265 **3 Claims**



3. A method of demodulating a double sideband amplitude modulated signal in a quasi-synchronous area coverage scheme utilizing sideband diversity, the method comprising the steps:

frequency down-converting an input signal,

mixing the frequency down-converted signal in quadrature with a local oscillator frequency in two mixers to provide first and second output signals having a relative phase difference of 90° therebetween,

deriving a first carrier error signal by low-pass filtering the output of one of the two mixers,

deriving a second error signal from the sidebands in the down-converted signal by band-pass filtering the outputs of the two mixers, said band-pass filtering blocking D.C. signal components of said mixer outputs, mixing said band-pass filtered outputs and low-pass filtering the output of said mixing operation,

combining said first and second error signals to form a composite error signal, and

utilizing the composite error signal to lock the frequency of a frequency controllable oscillator used in demodulating the received signal.

4,485,488

MICROWAVE SUBHARMONIC MIXER DEVICE

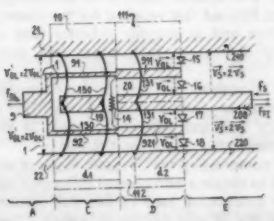
Michel Houdart, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Sep. 24, 1982, Ser. No. 423,319

Claims priority, application France, Oct. 23, 1981, 81 19938

Int. Cl.³ H04B *1/26*

U.S. Cl. 455—327 **9 Claims**



1. A wide band microwave subharmonic mixer comprising:

signal dividing means, responsive to a local oscillator signal, for dividing said local oscillator into a first signal and a second signal;

signal dividing and combining means for receiving a microwave signal and for outputting an intermediate frequency signal;

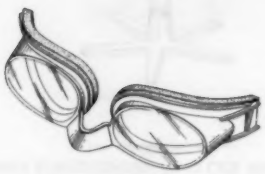
first and second balanced frequency converting means, each coupled to said signal dividing and combining means, said first converting means responsive to said first signal, said second converting means responsive to said second signal, said first and second converting means for converting said first and second signals, respectively, and said microwave signal into said intermediate frequency signal, said first and second converting means each comprising a pair of diodes;

a dielectric substrate;

coplanar transmission lines means, disposed on said substrate, for coupling said signal dividing means to said first and second converting means; and

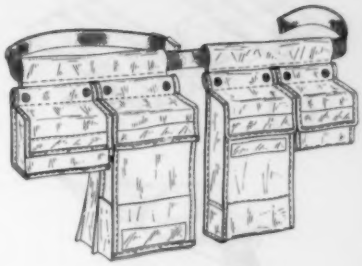
slotted transmission line means, disposed on said substrate, for coupling said first and second converting means to said signal dividing and combining means.

276,474
WATER GOGGLE
Neville Sheldon, St. Lambert, Canada, assignor to Tilbes Mfg. Co. Ltd., St. Laurent, Canada
Filed Aug. 26, 1982, Ser. No. 412,036
Term of patent 14 years
U.S. Cl. D2—234

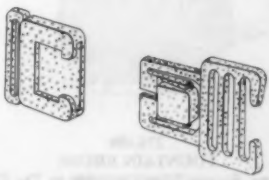


276,475
COSTUME
Robert Fletcher, Los Angeles, Calif., assignor to Paramount Pictures Corporation, New York, N.Y.
Filed Jun. 7, 1982, Ser. No. 385,986
Term of patent 14 years
U.S. Cl. D2—189

276,476
EMERGENCY BAG FOR SANITARY ARTICLES
Krister Johansson, and Leif-Axel Hofbrink, both of Uddevalla, Sweden, assignors to Handelsbolaget Johrink, Johansson & Hovbrink, Sweden
Filed Nov. 3, 1981, Ser. No. 317,743
Claims priority, application Sweden, May 5, 1981, 81-1093
Term of patent 14 years
U.S. Cl. D2—383



276,477
BUCKLE FOR BELTS OR THE LIKE
Yoshihiro Kanzaka, Nyuzen, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed May 18, 1982, Ser. No. 379,565
Claims priority, application Japan, Nov. 20, 1981, 56-51417
Term of patent 14 years
U.S. Cl. D2—414



276,478
BABY CARRIER
Mary C. Fallon, 7345 Draper Ave., La Jolla, Calif. 92037
Filed Nov. 19, 1981, Ser. No. 322,879
Term of patent 14 years
U.S. Cl. D3—31

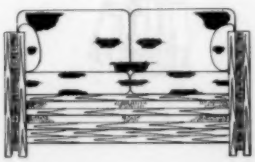
276,479
COMBINED KEY HOLDER AND WRITING INSTRUMENT
Gian L. Mori, Via Andorno 5, Torino, Italy
Filed Jul. 16, 1982, Ser. No. 398,786
Claims priority, application Italy, Jan. 18, 1982, 52820/82[U]
Term of patent 14 years
U.S. Cl. D3—62

276,480
FOUNTAIN BRUSH
Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Jun. 14, 1982, Ser. No. 388,580
Term of patent 14 years
U.S. Cl. D4—127

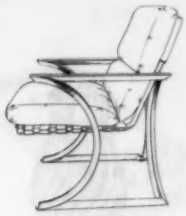
276,481
CHAIR
Charles D. Helmboldt, Caledonia Township, Kent County, Mich., assignor to Haworth Mfg., Inc., Holland, Mich.
Filed Sep. 29, 1980, Ser. No. 192,142
The portion of the term of this patent subsequent to Dec. 4, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—366

276,482
FOOTSTOOL
Joel A. Kramer, Bradenton, and Alton A. Harper, Tustin, both of Fla., assignors to Tropitone Furniture Company, Inc., Sarasota, Fla.
Filed Sep. 29, 1982, Ser. No. 432,110
Term of patent 14 years
U.S. Cl. D6—349

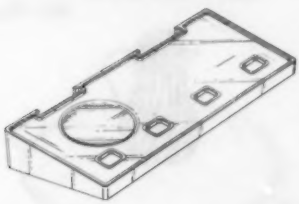
276,483
SEAT
Robert V. Thompson, Boatyard Condominiums, 75th Ave. North, Myrtle Beach, S.C. 29577
Filed Apr. 23, 1981, Ser. No. 256,939
The portion of the term of this patent subsequent to Sep. 27, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—379



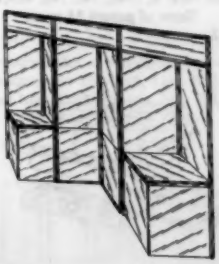
276,484
DINING CHAIR
Joel A. Kramer, Bradenton, Fla., and Alton A. Harper, Tustin, Calif., assignors to Tropitone Furniture Company, Inc., Sarasota, Fla.
Filed Sep. 30, 1982, Ser. No. 430,165
Term of patent 14 years
U.S. Cl. D6—373



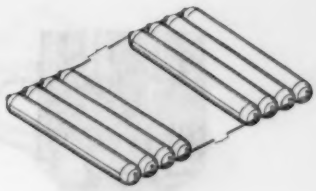
276,485
COMBINED TOOTHBRUSH AND CUP SHELF OR THE LIKE
William K. Fahey, Longwood, Fla., and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Aug. 10, 1982, Ser. No. 406,840
Term of patent 14 years
U.S. Cl. D6—531



276,486
DISPLAY STAND
Melvin M. Miller, Bloomington, Ind., assignor to Channel-Kor Systems Inc., Bloomington, Ind.
Filed Jun. 18, 1982, Ser. No. 389,580
Term of patent 14 years
U.S. Cl. D6—471



276,487
CUSHION
Bill C. J. Kao, Room 8A, Ta-Fong Bldg., 210 Nan-King E. Rd. Sec. 3, Taipei, Taiwan
Continuation of Ser. No. 155,648, Jun. 2, 1980,. This application Aug. 17, 1982, Ser. No. 408,581
Term of patent 14 years
U.S. Cl. D6—596



276,488
CUP OR SIMILAR ARTICLE
Philippe J. Durand, Les Daneaux, Chemin de la Garenne, 62510 Arques, France
Filed Aug. 23, 1982, Ser. No. 410,849
Claims priority, application Hague, May 24, 1982, DM/001 481
Term of patent 14 years
U.S. Cl. D7—9

276,489

CUP OR SIMILAR ARTICLE

Philippe J. Durand, Les Danceaux, Chemin de la Garenne, 62510 Arques, France

Filed Aug. 23, 1982, Ser. No. 410,635

Claims priority, application Hague, May 24, 1982, DM/001 481

Term of patent 14 years

U.S. Cl. D7—9

276,490

INSULATED JUG

Anso Zimmermann, Hersfeld, Fed. Rep. of Germany, assignor to Dr. Anso Zimmermann Isolierflaschen, Fed. Rep. of Germany

Filed Sep. 29, 1981, Ser. No. 306,899

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1981, MR 149

Term of patent 14 years

U.S. Cl. D7—317

276,491

BARBECUE GRILL BODY

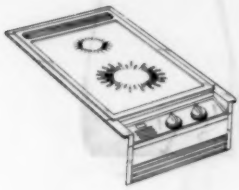
Roger T. Shaper, and Stephen J. Shaper, both of Houston, Tex., assignors to Locke Stove Company, Kansas City, Mo.

Filed Nov. 4, 1982, Ser. No. 439,117

Term of patent 14 years

U.S. Cl. D7—332

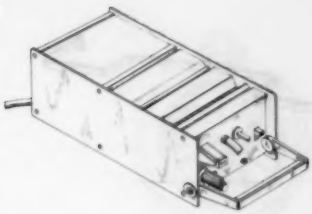
276,492
COOKING TABLE
Shigeki Sasaki, Aichi, Japan, assignor to Rinnai Kabushiki Kaisha, Nagoya, Japan
Filed Jan. 22, 1982, Ser. No. 341,753
Claims priority, application Japan, Jan. 30, 1981, 56-33296
Term of patent 14 years
U.S. Cl. D7—346



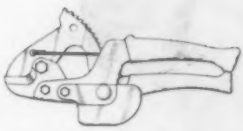
276,493
WOK
William C. Cesaroni, Glenview, Ill., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Dec. 27, 1982, Ser. No. 453,246
Term of patent 14 years
U.S. Cl. D7—355

276,494
PLASTIC LANDSCAPE EDGING UNIT
Polly Novak, Wonder Lake, and Douglas Touissaint, McHenry, both of Ill., assignors to Filtertek, Inc., Hebron, Ill.
Filed May 17, 1982, Ser. No. 378,768
Term of patent 14 years
U.S. Cl. D8—1

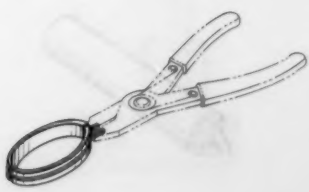
276,495
COMBINED POWER SOURCE AND TOOL HOLDER
Frank Sylvia, Columbia, Md., assignor to Pace Incorporated, Laurel, Md.
Filed Jun. 26, 1981, Ser. No. 277,697
Term of patent 14 years
U.S. Cl. D8—30



276,496
WIRE CUTTER AND STRIPPER
Takashi Yokoyama, Mie, Japan, assignor to Kabushiki Kaisha Matsuzaka Tokkosho (MCC Corporation), Mie, Japan
Filed Jun. 18, 1982, Ser. No. 390,075
Claims priority, application Japan, Dec. 18, 1981, 56-56158
Term of patent 14 years
U.S. Cl. D8—52



276,497
CALIPER TOOL
Maynard L. Smith, 5343 Adobe Falls Rd., #219, San Diego, Calif. 92120
Filed Feb. 27, 1981, Ser. No. 238,815
Term of patent 14 years
U.S. Cl. D8—54



276,498
CURTAIN ROD FOR USE IN FRAMING FURNITURE OR THE LIKE
William A. Hand, 3161 Sullivant Ave., Columbus, Ohio 43204
Division of Ser. No. 226,424, Jan. 19, 1981, Pat. No. Des. 272,876. This application Mar. 23, 1983, Ser. No. 477,901
Term of patent 14 years
U.S. Cl. D8—376

276,499
BEVERAGE CONTAINER
Kazuo Kamada, Yokohama; Takamitsu Nozawa, and Yuko Onoda, both of Tokyo, all of Japan, assignors to Sapporo Breweries Limited, Tokyo, Japan
Filed Jul. 27, 1981, Ser. No. 286,968
Term of patent 14 years
U.S. Cl. D9—325

276,500
CONTAINER FOR SOLDER OR THE LIKE
Vasant J. Shend'ge, London, and Geoffrey S. Thompson, Windlesham, both of England, assignors to Multicore Solders Limited, Hemel Hempstead, England
Filed Mar. 12, 1982, Ser. No. 357,768
Claims priority, application United Kingdom, Jan. 8, 1982, 1004523
Term of patent 14 years
U.S. Cl. D9—354

276,501
BOTTLE
John Pardo, Yonkers, N.Y., assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Sep. 7, 1982, Ser. No. 415,519
Term of patent 14 years
U.S. Cl. D9—389

276,502
PACKING CONTAINER
Yuji Imamura, Yokohama, Japan, assignor to Tokai Metals Co., Ltd., Yokohama, Japan
Filed Mar. 15, 1982, Ser. No. 358,035
Claims priority, application Japan, Sep. 14, 1981, 56-40717
Term of patent 14 years
U.S. Cl. D9—416

276,503
PACKAGING CONTAINER FOR A BOTTLE OR THE LIKE
Serge Mansau, Paris, France, assignor to Lever Brothers Company, New York, N.Y.
Filed Jun. 3, 1982, Ser. No. 384,463
Term of patent 14 years
U.S. Cl. D9—430

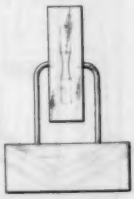
276,504
COMBINED SUPPORT AND CARRIER FOR A CONTAINER OR THE LIKE
Leo R. Moran, Kenosha, Wis.; Anthony A. Leiber, Libertyville, Ill., and Joel Frankfort, Phoenix, Ariz., assignors to Abbott Laboratories, North Chicago, Ill.
Filed Apr. 8, 1982, Ser. No. 366,638
Term of patent 14 years
U.S. Cl. D9—434

276,505
COMBINED MIRROR AND CLOCK
Sharon L. Bezak, Springfield, N.J., assignor to Reliable Manufacturing Company, Inc., Union, N.J.
Filed Jan. 27, 1984, Ser. No. 574,382
Term of patent 14 years
U.S. Cl. D10—2

276,506
CLOCK
Walter Henkels, Holunderweg 1, D-5142 Hückelhoven, Fed. Rep. of Germany
Filed Jul. 15, 1982, Ser. No. 398,341
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1982, MR 140
Term of patent 14 years
U.S. Cl. D10—23

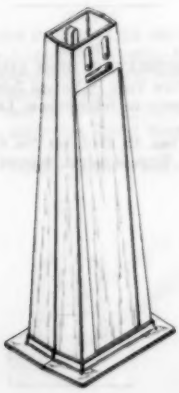
276,507
PHOTOGRAPHIC TIMING APPARATUS
Gene Nocon, Studio A, Floral Hall, Covent Garden, London W2, England
Filed Dec. 14, 1982, Ser. No. 449,684
Claims priority, application United Kingdom, Jun. 24, 1982, 1007388
Term of patent 14 years
U.S. Cl. D10—40

276,508
DECORATIVE DESK TIMER
Gordon Howard, New York, N.Y., and Jaime Annexy, Princeton, N.J., assignors to International Licensing Associates, New York, N.Y.
Filed Sep. 15, 1982, Ser. No. 418,483
Term of patent 14 years
U.S. Cl. D10—44

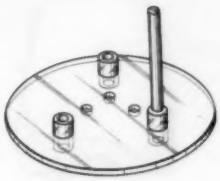


276,509
COUNTER
Nobuyasu Ito; Tadashi Fujino, both of Urawa, and Tsutomu Kashiwagi, Tokyo, all of Japan, assignors to Dai-Ichi Seiko Co., Ltd., Kawaguchi, Japan
Filed Apr. 29, 1982, Ser. No. 373,242
Claims priority, application Japan, Oct. 30, 1981, 56/48102
Term of patent 14 years
U.S. Cl. D10—97

276,510
ROAD BARRIER
James A. Bent, 5002 Churchill, Westminster, Calif. 92683, and Bruce C. Bent, 11791 Paseo Bonita, Los Alamitos, Calif. 90720
Filed Jan. 10, 1983, Ser. No. 439,851
Term of patent 14 years
U.S. Cl. D10—109



276,511
DRAINAGE SUPPORT FOR PLANTS
Richard Kole; Joann Kole, both of 3353 Woodland Dr., Murrysville, Pa. 15668, and Lawrence Schlander, 268 Russeltown Rd., Cheswick, Pa. 15204
Filed Jun. 24, 1981, Ser. No. 276,927
Term of patent 14 years
U.S. Cl. D11—164



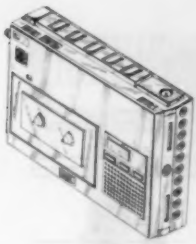
276,512
BICYCLE
Niels Gammelgaard, Copenhagen, and Lars Mathiesen, Valby, both of Denmark, assignors to RABO Aps, Copenhagen, Denmark
Filed Sep. 1, 1982, Ser. No. 413,819
Term of patent 14 years
U.S. Cl. D12—111

276,513
COMBINED WHEEL AND TIRE
Horst L. A. Honsa, Savannah, Tenn., assignor to Sun Metal Products, Inc., Warsaw, Ind.
Filed Mar. 15, 1982, Ser. No. 357,806
Term of patent 14 years
U.S. Cl. D12—135

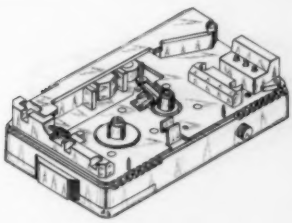
276,514
SIDE VIEW MIRROR FOR AN AUTOMOBILE
Björn E. A. Envall, Vänersborg, and Aribert Vahlenbreder, Trollhättan, both of Sweden, assignors to Saab-Scania Aktiebolag, Trollhättan, Sweden
Filed Nov. 15, 1982, Ser. No. 441,552
Claims priority, application Sweden, Jun. 2, 1982, 82-1449
Term of patent 14 years
U.S. Cl. D12—187

276,515
POWER GENERATOR
Tadahiro Yaguchi, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 3, 1982, Ser. No. 414,612
Claims priority, application Japan, Apr. 16, 1982, 57-16693
Term of patent 14 years
U.S. Cl. D13—1

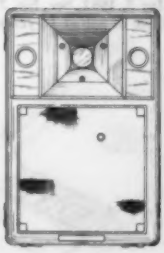
276,516
TAPE RECORDER
Toshihiko Kadota, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Mar. 8, 1982, Ser. No. 355,928
Claims priority, application Japan, Dec. 30, 1980, 55/53772
Term of patent 14 years
U.S. Cl. D14—6



276,517
TAPE DECK TOP AND CARRYING CASE BASE FOR A TAPE RECORDER
Frank Dekker, Santa Ana, and Isaac R. Cherry, Mission Viejo, both of Calif., assignors to Del Mar Avionics, Irvine, Calif.
Filed Oct. 17, 1980, Ser. No. 197,926
Term of patent 14 years
U.S. Cl. D14—10



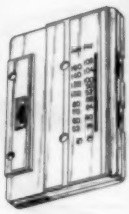
276,518
PORTABLE LOUDSPEAKER SYSTEM
Jimmy L Clemans, Buchanan, Mich., assignor to Electro-Voice, Incorporated, Buchanan, Mich.
Filed Nov. 16, 1981, Ser. No. 321,567
Term of patent 14 years
U.S. Cl. D14—33

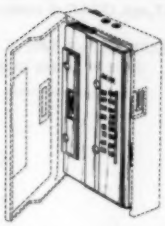


276,519
LOUDSPEAKER HOUSING
Gilbert L. Hobrough; Theodore B. Hobrough, both of 1300 Richards St., and Colin Lowndes, P.O. Box 35446, Station E, all of Vancouver, B.C., Canada
Filed Jun. 4, 1982, Ser. No. 384,912
Term of patent 14 years
U.S. Cl. D14—33

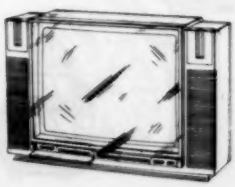
276,520
TELEPHONE
Jeffrey D. Breslow, Highland Park; Robert S. Morrison, Vernon Hills, and Howard J. Morrison, Deerfield, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed May 5, 1982, Ser. No. 374,985
Term of patent 14 years
U.S. Cl. D14—64

276,521
RADIO TUNER
Takeshi Arimura, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed May 27, 1982, Ser. No. 382,788
Claims priority, application Japan, Feb. 24, 1982, 577289
Term of patent 14 years
U.S. Cl. D14—69

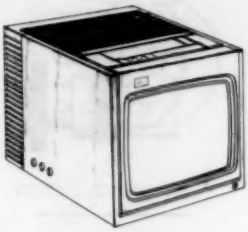




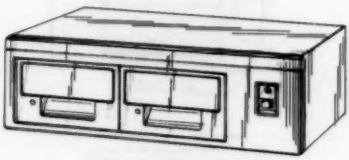
276,522
TELEVISION RECEIVER
Kiyoshi Inoue, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Mar. 23, 1982, Ser. No. 360,974
Claims priority, application Japan, Feb. 20, 1981, 566313
Term of patent 14 years
U.S. Cl. D14—80



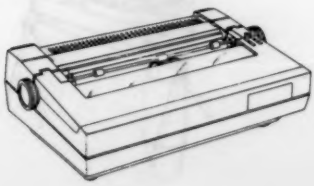
276,523
TELEVISION RECEIVER
Reiji Ohshima, Chiba, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Mar. 10, 1982, Ser. No. 356,756
Claims priority, application Japan, Feb. 20, 1981, 566301
Term of patent 14 years
U.S. Cl. D14—81



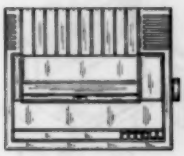
276,524
MAGNETIC DISC UNIT FOR ELECTRONIC COMPUTERS
Mikio Shibata, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 15, 1982, Ser. No. 357,859
Claims priority, application Japan, Sep. 19, 1981, 56/41251
Term of patent 14 years
U.S. Cl. D14—109



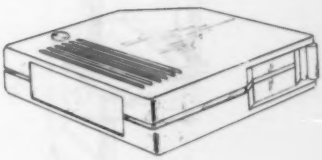
276,525
PRINTER
Masanori Hashimoto, c/o Kamiike 5-ryo 22-10 Kamiikedai 4-chome, Ohta-ku, Tokyo, Japan
Filed May 7, 1982, Ser. No. 376,120
Claims priority, application Japan, Nov. 9, 1981, 56/49707
Term of patent 14 years
U.S. Cl. D14—111



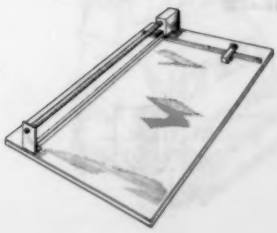
276,526
COMPUTER PRINTER
Kunio Akiyama, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Aug. 30, 1982, Ser. No. 412,816
Claims priority, application Japan, Mar. 3, 1982, 57-8902
Term of patent 14 years
U.S. Cl. D14—111



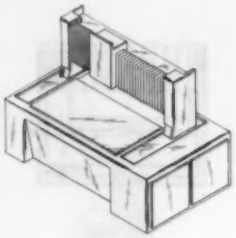
276,527
MAGNETIC DATA STORAGE CARTRIDGE
Charles D. Flanigan, San Jose, Calif., assignor to Microtek Storage Corporation, San Jose, Calif.
Filed Jun. 7, 1982, Ser. No. 386,053
Term of patent 14 years
U.S. Cl. D14—114



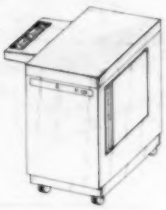
276,528
SCORING DEVICE FOR LAMINATED SHEET MATERIAL
Myron W. Shaffer, 2118 W. 11th, Irving, Tex. 75060
Filed Apr. 12, 1982, Ser. No. 367,418
Term of patent 14 years
U.S. Cl. D15—127



276,529
COMBINED WOODWORKING ROUTER AND SHAPER MACHINE
Robert L. Campbell, Jr., Hickory, N.C., assignor to Campbell Automation, Incorporated, Hickory, N.C.
Filed Aug. 19, 1982, Ser. No. 409,576
Term of patent 14 years
U.S. Cl. D15—127

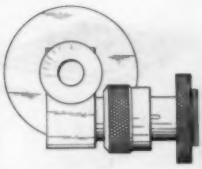


276,530
ORIGINAL FEEDER FOR COPYING MACHINE
Hideyuki Horie, Kamagaya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Apr. 30, 1982, Ser. No. 373,623
Claims priority, application Japan, Nov. 2, 1982, 56/48556
Term of patent 14 years
U.S. Cl. D16—32

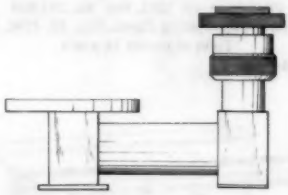


276,531
ADJUSTABLE DIRECT ENDOSCOPIC OPTICAL COUPLER
Richard E. Feinbloom, New York, N.Y., assignor to Designs for Vision, Inc., New York, N.Y.
Filed Jun. 1, 1982, Ser. No. 383,728
Term of patent 14 years
U.S. Cl. D16—130

276,532
BEAM SPLITTING ADJUSTABLE C-MOUNT OPTICAL COUPLER
Richard E. Feinbloom, New York, N.Y., assignor to Designs for Vision, Inc., New York, N.Y.
Filed Jun. 1, 1982, Ser. No. 383,729
Term of patent 14 years
U.S. Cl. D16—130



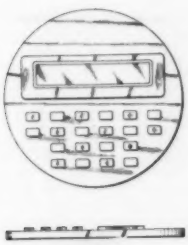
276,533
ENDOSCOPIC ADJUSTABLE OPTICAL COUPLER
Richard E. Feinbloom, New York, N.Y., assignor to Designs for Vision, Inc., New York, N.Y.
Filed Jun. 1, 1982, Ser. No. 383,355
Term of patent 14 years
U.S. Cl. D16—130



276,534
ELECTRONIC ORGAN
Paolo Bontempi, Trezzano sul Naviglio, Italy, assignor to Comus S.p.A., Italy
Filed Apr. 30, 1982, Ser. No. 373,563
Term of patent 14 years
U.S. Cl. D17—6

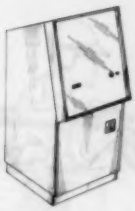
276,535
CHEWING TOBACCO LID CALCULATOR
Carl Seifert, Rte. 1, Box 45-B, Polson, Mont. 59860
Filed Oct. 4, 1982, Ser. No. 432,714
Term of patent 14 years
U.S. Cl. D18—2

276,536
CHEWING TOBACCO LID CALCULATOR
Carl A. Siefert, Rte. 1, Box 45-B, Polson, Mont. 59860
Filed Jan. 21, 1983, Ser. No. 459,715
Term of patent 14 years
U.S. Cl. D18—2

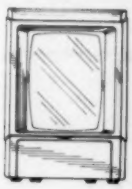


276,537
CRAYON HOLDER
Joel B. Tabachnik, New York, N.Y., assignor to Talbot Toys Ltd., Wanchai, Hong Kong
Filed May 13, 1982, Ser. No. 377,637
Term of patent 14 years
U.S. Cl. D19—82

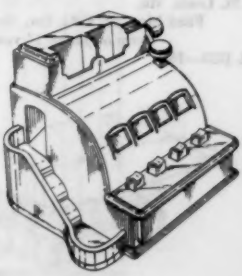
276,538
AUTOMATIC PASSENGER TICKET VENDING MACHINE
Yoshiaki Nishida, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Aug. 11, 1982, Ser. No. 407,289
Claims priority, application Japan, Feb. 18, 1982, 57-6423
Term of patent 14 years
U.S. Cl. D20—2



276,539
VIDEO ARCADE GAME AND DISPLAY HOUSING
Jay Smith, III, Pacific Palisades, and Moto Shimano, Los Angeles, both of Calif., assignors to Smith Engineering, Culver City, Calif.
Filed Jan. 6, 1982, Ser. No. 350,462
Term of patent 14 years
U.S. Cl. D21—13

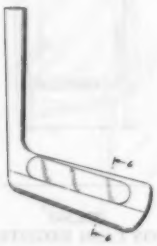


276,540
TOY CASH REGISTER
Ng C. Sun, Hong Kong, Hong Kong, assignor to Blue Box Toy Factory Pte. Limited, Singapore
Filed Sep. 29, 1982, Ser. No. 426,381
Claims priority, application United Kingdom, Apr. 19, 1982, 1006237
Term of patent 14 years
U.S. Cl. D21—124

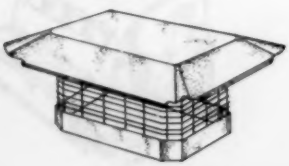


276,541
COMBINED TOY VEHICLE AND RIDER FIGURE
Kunio Miyazaki, and Shiro Ito, both of Tokyo, Japan, assignors to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jul. 27, 1982, Ser. No. 402,363
Claims priority, application Japan, Jan. 29, 1982, 57/3765
Term of patent 14 years
U.S. Cl. D21—134

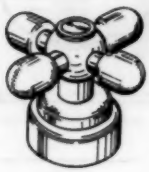
276,542
GOLF CLUB HEAD
John Wheatley, 1487 Farmington Ave., Farmington, Conn. 06032
Filed Sep. 30, 1982, Ser. No. 431,171
Term of patent 14 years
U.S. Cl. D21—220



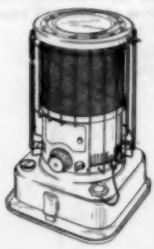
276,543
CHIMNEY CAP
Durward A. Hisey, St. Louis, Mo., assignor to Hy-C Company, Inc., St. Louis, Mo.
Filed Mar. 12, 1982, Ser. No. 357,732
Term of patent 14 years
U.S. Cl. D23—154



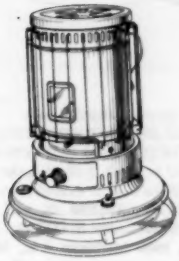
276,544
COMBINED FAUCET HANDLE AND ESCUTCHEON
Nazzareno Piesco, Milan, Italy, assignor to F.I.R. Rubinetterie S.p.A., Milan, Italy
Filed Mar. 3, 1982, Ser. No. 354,269
Claims priority, application Italy, Oct. 8, 1981, 23149/81[U]
Term of patent 14 years
U.S. Cl. D23—31



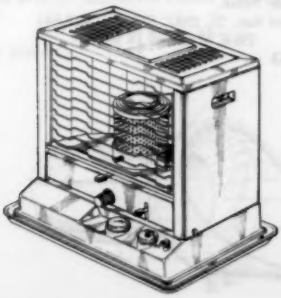
276,545
OIL HEATER
Daisaku Mori, and Youichi Takahashi, both of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 18, 1982, Ser. No. 389,794
Claims priority, application Japan, Feb. 19, 1982, 57-7133
Term of patent 14 years
U.S. Cl. D23—121



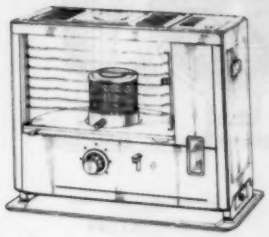
276,546
STOVE
Kenzo Okamoto; Hiroichi Sakai; Fumihiko Kitada, and Hideharu Kimura, all of Osaka, Japan, assignors to Imanishi Kinzoku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Sep. 13, 1982, Ser. No. 417,363
Claims priority, application Japan, Jun. 22, 1982, 57-28164
Term of patent 14 years
U.S. Cl. D23—121



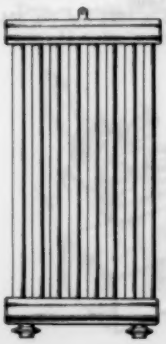
276,547
STOVE
Hideo Nishikawa, Osaka, Japan, assignor to Imanishi Kinzoku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Mar. 12, 1982, Ser. No. 357,794
Claims priority, application Japan, Dec. 2, 1981, 56-5365
Term of patent 14 years
U.S. Cl. D23—123



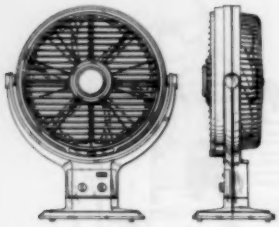
276,548
STOVE
Kenzo Okamoto; Hiroichi Sakai; Fumihiko Kitada, and Hideharu Kimura, all of Osaka, Japan, assignors to Imanishi Kinzoku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Sep. 13, 1982, Ser. No. 417,398
Claims priority, application Japan, Jun. 22, 1982, 57-28165
Term of patent 14 years
U.S. Cl. D23—123



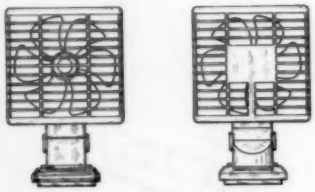
276,549
WATER-CIRCULATING HEAT EXTRACTOR
Clarence W. Cleer, Jr., R.D. #2, Box 90, Kane, Pa. 16735
Filed May 25, 1982, Ser. No. 381,880
Term of patent 14 years
U.S. Cl. D23—127



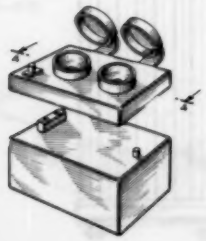
276,550
ELECTRIC FAN
Shuichi Kouno, Tokorozawa; Katsuhiko Nishiwaki, Tokyo, and Kenichi Watanabe, Yamagata, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 17, 1982, Ser. No. 378,799
Claims priority, application Japan, Dec. 4, 1981, 56-53551
Term of patent 14 years
U.S. Cl. D23—155



276,551
ELECTRIC FAN
Shinichi Morooka, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Oct. 12, 1982, Ser. No. 436,748
Term of patent 14 years
U.S. Cl. D23—155

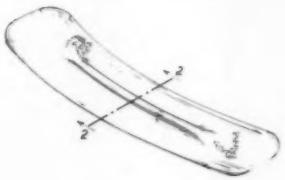


276,552
ULTRASONIC CONTACT LENS CLEANER
Allen E. Ripingill, Jr., Poway, Calif., and Larry E. Rhoads, 1715 Hicks St., Oceanside, Calif. 92054, assignors to Larry E. Rhoads, Oceanside, Calif.
Filed Feb. 1, 1982, Ser. No. 344,633
Term of patent 14 years
U.S. Cl. D24—9

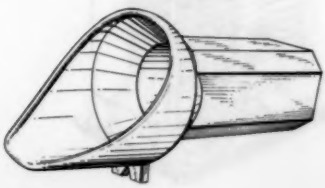


276,553
OIL MASSAGE BAND
Hans Landes, Achenerweg 56, 7972 Isny/Allg, Fed. Rep. of Germany
Filed Jan. 19, 1982, Ser. No. 340,810
Term of patent 14 years
U.S. Cl. D24—36

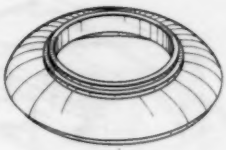
276,554
SANITARY SHIELD
Jacob A. Glassman, 1680 Michigan Ave., Miami Beach, Fla. 33139
Filed Sep. 27, 1982, Ser. No. 423,996
Term of patent 14 years
U.S. Cl. D24—51



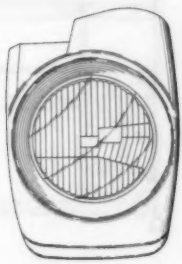
276,555
MEDICINE DOSAGE SPOON
Terrance O. Noble, Rosemount, Minn., assignor to Quanterron, Inc., Burnsville, Minn.
Filed Sep. 29, 1982, Ser. No. 428,444
Term of patent 14 years
U.S. Cl. D24—63



276,556
FITTING FOR STREET BOLLARDS OR THE LIKE
Robert E. Haggard, Snohomish, Wash., assignor to Merry Haggard, Snohomish, Wash.
Filed Nov. 16, 1981, Ser. No. 322,110
Term of patent 14 years
U.S. Cl. D25—77

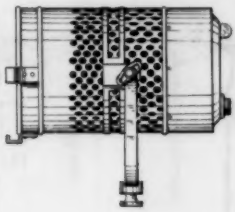


276,557
COMBINED HEAD LIGHT FAIRING AND INSTRUMENT PANEL FOR MOTORCYCLES
Klaus V. Gevert, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke A.G., Fed. Rep. of Germany
Filed Dec. 23, 1980, Ser. No. 219,867
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1980, MR 12182
Term of patent 14 years
U.S. Cl. D26—34

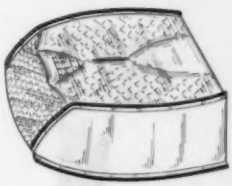


276,558
FLOOD LIGHT
Ming K. Chan, First Floor, 58 Hung To Rd., Kwun Tong, Kowloon, Hong Kong
Filed Apr. 30, 1982, Ser. No. 373,413
Claims priority, application United Kingdom, Feb. 17, 1982, 1005141
Term of patent 14 years
U.S. Cl. D26—63

276,559
COMBINED FLOOD AND SPOT LIGHT
William G. Krokaugger, Chatsworth, Calif., assignor to Mole-Richardson Company, Hollywood, Calif.
Filed May 24, 1982, Ser. No. 381,440
Term of patent 14 years
U.S. Cl. D26—63

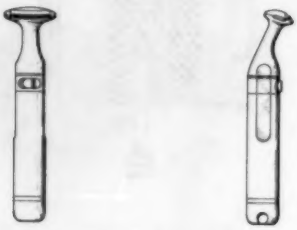


276,560
REFLECTOR
Bertil Habro, Lidingö , Sweden, assignor to Roshamn Industri AB, Sweden
Filed Apr. 5, 1982, Ser. No. 365,478
Claims priority, application Sweden, Oct. 5, 1981, 81-2209
Term of patent 14 years
U.S. Cl. D26—128



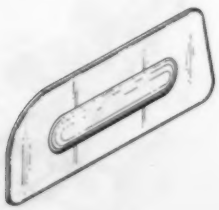
276,561
NAVAL LINT REMOVING PICK
Larry M. Belcher, 1601 E. Minorka St., Tucson, Ariz. 85706
Filed Sep. 1, 1982, Ser. No. 414,570
Term of patent 14 years
U.S. Cl. D28—9

276,562
ELECTRIC SHAVER
Yoshio Mizobata, Kyoto, and Takeshi Takagi, Neyagawa, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Apr. 2, 1982, Ser. No. 365,048
Claims priority, application Japan, Oct. 22, 1981, 56-47213
Term of patent 14 years
U.S. Cl. D28—49

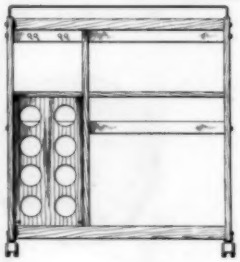


276,563
ELECTRIC DRY SHAVER
Victor K. Kiam, II, 119 Wire Mill Rd., Stamford, Conn. 06903, and Robert A. Mockovak, 21 S. Main St., Newtown, Conn. 06470
Filed Nov. 1, 1982, Ser. No. 437,975
Term of patent 14 years
U.S. Cl. D28—50

276,564
BOWL SCRAPER OR THE LIKE
Janice L. Leininger, Providence, R.I., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Mar. 22, 1982, Ser. No. 360,267
Term of patent 14 years
U.S. Cl. D32—46



276,565
BAR CART
Alfredo Cortina, Miami, Fla., assignor to The Mackie Company, Inc., Miami, Fla.
Filed Mar. 2, 1982, Ser. No. 354,026
Term of patent 14 years
U.S. Cl. D34—21



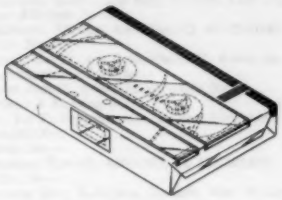
276,566
WRAPPING SHEET FOR A CASSETTE
Keiichi Yoshizawa, Chiba, Japan, assignor to TDK Corporation, Tokyo, Japan
Filed Apr. 19, 1982, Ser. No. 369,967
Term of patent 14 years
U.S. Cl. D59—2 C

276,567

WRAPPING SHEET FOR A CASSETTE

Kelichi Yoshizawa, Chiba, Japan, assignor to TDK Corporation, Tokyo, Japan

Filed Apr. 19, 1982, Ser. No. 369,968
Term of patent 14 years
U.S. Cl. D59—2 C

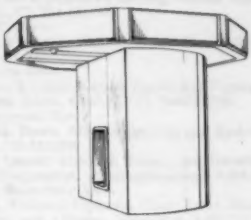


276,568

AUTOMATIC BANK TELLER KIOSK

James T. Green, Jacksonville, Tex., assignor to Superior Fiberglass, Inc., Jacksonville, Tex.

Filed Jun. 18, 1982, Ser. No. 389,673
Term of patent 14 years
U.S. Cl. D99—28



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF NOVEMBER, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Menarini S.A.S.: *See*—
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Abe, Ryozo: *See*—
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Ackerley, Kenneth E.: *See*—
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Alderman, Roy. Freeze guard valve. 4,484,594, Cl. 137-62.000.

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American Trading and Production Corporation: *See*—
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Anderson, Kenneth. Loose-leaf binder. 4,484,830, Cl. 402-77.000.

Anderson, Richard N., to Hunter Douglas Inc. Venetian blind structure. 4,484,611, Cl. 160-107.000.

Andersson, Roland J. E., to Tetra Pak International AB. Arrangement for the processing of a packing container. 4,484,977, Cl. 156-583.100.

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Bartelink, Everhard H. B. Intercom adapter for telephones. 4,485,273, Cl. 179-81.00R.

Bartz, David A.: *See*—
Williams, Fred H., 4,484,743, Cl. 273-148.00B.

BASF Aktiengesellschaft: *See*—
Bung, Richard; Gans, Karl; Schreyer, Gerold; and Welzel, Gerhard, 4,485,055, Cl. 264-8.000.
Heinz, Robert; and Sommer, Karl, 4,484,879, Cl. 425-145.000.

Basnett, Robert T., to Westinghouse Electric Corp. Mechanical interlock mechanism for a vacuum contactor. 4,485,366, Cl. 335-160.000.

Bates, Frank S.; and Cohen, Robert E., to Massachusetts Institute of Technology. Macroscopic divinylbenzene homogeneous gels and process. 4,485,207, Cl. 524-751.000.

Batz, Hans-George: *See*—
Siedel, Joachim; Neumann, Ulrich; Ziegenhorn, Joachim; Batz, Hans-George; Lenz, Helmut; Pautz, Brigitte; and Albert, Winfried, 4,485,177, Cl. 436-547.000.

Baudet, Pierre: *See*—
de Sivry, Bruno J. M.; Migliarese-Caputi, Jean-Louis; Herve, Guy J.; Baylot, Michel P.; Colas, Claude J.; and Baudet, Pierre, 4,485,344, Cl. 324-207.000.

Bauer, Denise; Fourre, Patrick; and Sabot, Jean-Louis, to Rhone-Poulenc Specialites Chemiques. Liquid/liquid extraction of gallium values from basic aqueous solutions thereof. 4,485,076, Cl. 423-112.000.

Bauer, Hannsgeorg: *See*—
Schudlich, Kurt; Vielstich, Gunter; Muhlenbeck, Josef; Otto, Josef; Bauer, Hannsgeorg; Zollner, Dieter H.; and Rittmann, Friedrich, 4,484,897, Cl. 445-67.000.

Bauer, Karl: *See*—
Dammann, Peter; Schippers, Heinz; and Bauer, Karl, 4,484,437, Cl. 57-340.000.

Bauer, Wolfgang: *See*—
Armbrecht, Norbert; Bauer, Wolfgang; and Ribka, Joachim, 4,485,042, Cl. 534-796.000.

Baxter Travenol Laboratories, Inc.: *See*—
Kaufman, Stephen B.; Hart, John W.; and Chamernik, Richard, 4,484,920, Cl. 604-416.000.
Laurin, Dean, 4,485,064, Cl. 264-242.000.

Bayer Aktiengesellschaft: *See*—
Fuchs, Rainer; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,485,252, Cl. 560-8.000.
Hochstrasser, Karl; and Wachter, Elmar, 4,485,100, Cl. 424-177.000.
Musch, Rudiger; Gobel, Wilhelm; Konter, Wolfgang; and Muller, Eberhard, 4,485,216, Cl. 525-215.000.
Noll, Klaus; Pedain, Josef; and Bock, Manfred, 4,485,226, Cl. 528-45.000.

Baylot, Michel P.: *See*—
de Sivry, Bruno J. M.; Migliarese-Caputi, Jean-Louis; Herve, Guy J.; Baylot, Michel P.; Colas, Claude J.; and Baudet, Pierre, 4,485,344, Cl. 324-207.000.

Baynum, Wallace E. Stand for a vertical post such as a tree. 4,484,660, Cl. 182-187.000.

Bays, David E.: *See*—
Clitherow, John W.; Price, Barry J.; Hayes, Roger; and Bays, David E., 4,485,104, Cl. 424-246.000.

Bechtel International Corporation: *See*—
McClure, Cole R., Jr., 4,484,423, Cl. 52-167.000.

Beck, H. Wayne: *See*—
Hettinger, William P., Jr.; Beck, H. Wayne; Carruthers, James D.; Cornelius, Edward B.; Kovach, Stephen M.; and Palmer, James L., 4,485,184, Cl. 502-67.000.

Beckman Instruments, Inc.: *See*—
Harman, John N., III; and Neti, Radhakrishna M., 4,485,001, Cl. 204-408.000.
Strain, David H., 4,484,906, Cl. 494-16.000.

Becze, Thomas D., to GMP Institute, Inc. Good manufacturing practices board game. 4,484,748, Cl. 273-256.000.

Beecham Group Limited: *See*—
Osborne, Neal F., 4,485,110, Cl. 424-270.000.

Beecham Wuelfing GmbH & Co., KG: *See*—
Jozic, Ljerka, 4,485,108, Cl. 424-267.000.

Beeston, Timothy W.; and Attrill, Laurence S., to Lee Electric (Lighting) Limited. Power supply for arc lamps. 4,485,434, Cl. 363-132.000.

Belart, Juan; and Wienecke, Franz, to ITT Industries, Inc. Brake booster for an automotive vehicle. 4,484,509, Cl. 91-369.00A.

Belcher, Samuel L.: *See*—
Wiatt, James G.; Calvert, James W.; Belcher, Samuel L.; and Smith, Roger D., 4,484,884, Cl. 425-534.000.

Bell, Eugene, to Massachusetts Institute of Technology. Tissue-equivalent and method for preparation thereof. 4,485,096, Cl. 424-95.000.

Bell, Eugene, to Massachusetts Institute of Technology. Bone-equivalent and method for preparation thereof. 4,485,097, Cl. 424-95.000.

Bell, Gordon M.; and Ridlen, James R., to General Electric Company. Encapsulating composition for inductive devices containing elastomeric polybutadiene having predominate trans-1,4 configuration. 4,485,218, Cl. 525-257.000.

Bell & Howell Company: *See*—
Frystak, Richard; and Friedlund, Donald R., 4,484,521, Cl. 101-111.000.

Bellanger, Maurice G.: *See*—
Duong, Tuan K.; Lefort, Emmanuel; and Bellanger, Maurice G., 4,485,272, Cl. 179-81.00B.

Bender, Gerald M., to United States of America, Air Force. Pulse transformer package for impedance matching a laser diode to a transmission line. 4,485,361, Cl. 333-32.000.

Bender, Heinz; Buch, Veit; Beyerle, Rudi; and Kuhlein, Klaus, to Cassella Aktiengesellschaft. Process for the preparation of optionally-substituted 1,2,3,4-tetrahydro-9-cyanomethylcarbazol-1-ones. 4,485,240, Cl. 548-449.000.

Bendix Corporation, The: *See*—
Cording, Richard W.; and Teager, John C., Jr., 4,485,452, Cl. 364-565.000.
Mason, Murray R., 4,484,495, Cl. 74-785.000.
Runkle, Dean E., 4,484,866, Cl. 417-495.000.
Schildkraut, Alan L.; and Werth, Dee A., 4,484,790, Cl. 339-89.00M.

Bendszus, Otto: *See*—
Scharf, Hans-Dieter; Frauenrath, Herbert; Heine, Hans-Georg; Rudolph, Hans; Neuhaus, Karl-Friedrich; and Bendszus, Otto, 4,485,249, Cl. 549-347.000.

Benjamin Baker (Lye) Limited: *See*—
Griffiths, Derek A., 4,484,438, Cl. 59-61.000.

Benjamin, Lawrence S.: *See*—
Pennella, Andrew J., Jr.; Benjamin, Lawrence S.; Bergman, Adolph G.; and Jahnke, William R., 4,484,845, Cl. 409-134.000.

Bentley, Gustavus A., to Federal-Mogul Corporation. Rotating-lip bidirectional hydrodynamic oil seal. 4,484,752, Cl. 277-25.000.

Bentley Laboratories: *See*—
Raible, Donald A., 4,484,912, Cl. 604-175.000.

Bergman, Adolph G.: *See*—
Pennella, Andrew J., Jr.; Benjamin, Lawrence S.; Bergman, Adolph G.; and Jahnke, William R., 4,484,845, Cl. 409-134.000.

Berkley & Company, Inc.: *See*—
McMickle, Robert L.; Rumbaugh, James T.; and Netsch, Robert L., 4,484,586, Cl. 128-786.000.

Berkowitz, Irving L., to Kason Industries, Inc. Removable cylinder lock. 4,484,462, Cl. 70-368.000.

Berlin, Richard B.; Javna, Stephen L.; and Berlin, Richard B., Jr. Cannula and clamp device. 4,484,911, Cl. 604-174.000.

Berlin, Richard B., Jr.: *See*—
Berlin, Richard B.; Javna, Stephen L.; and Berlin, Richard B., Jr., 4,484,911, Cl. 604-174.000.

Berlincourt, Don A.; Pim, Kendall A.; and Randles, Joseph L., to Channel Products, Inc. Piezoelectric high voltage impact mechanism. 4,485,324, Cl. 310-339.000.

Bert, Georges: *See*—
Nuzillat, Gerard; Pham Ngu, Tung; and Bert, Georges, 4,485,316, Cl. 307-446.000.

Berthier, Gilbert: *See*—
Lewiner, Jacques; Hennion, Claude; and Berthier, Gilbert, 4,485,381, Cl. 340-825.310.

Berwald, Werner, to Gewerkschaft Eisenhutte Westfalia. Scraper-chain conveyors. 4,484,677, Cl. 198-735.000.

Bes, Richard F. T.; Knol, Jan D.; and Roest, Gooitsen, to Holland Colours Apeldoorn B.V. Particulate coloring composition made by prilling. 4,484,952, Cl. 106-308.00Q.

Besancon, Denis, to Societe d'Etudes Scientifiques et Industrielles de Lle-de France. Method for treating depressive syndrome by administering N-(diethylaminoethyl)-2-methoxy-5-methylsufonyl benzamide. 4,485,115, Cl. 424-324.000.

Besnard, Henri: *See*—
Henocque, Jean; and Besnard, Henri, 4,484,536, Cl. 116-275.000.

Beyerle, Rudi: *See*—
Bender, Heinz; Buch, Veit; Beyerle, Rudi; and Kuhlein, Klaus, 4,485,240, Cl. 548-449.000.

Biancalani, Mauro. Steam iron with rear water reservoir. 4,484,399, Cl. 38-77.300.

BICC Public Limited Company: *See*—
Childs, John B.; and Fairey, Norman R., 4,484,876, Cl. 425-79.000.

Biceroglu, Omer, to Exxon Research and Engineering Co. Start-up method for a hydrorefining process. 4,485,006, Cl. 208-216.00R.

Bid-Well Corporation: *See*—
Rowe, Murray A.; and Ulmer, Ewald R., 4,484,834, Cl. 404-84.000.

Bidwell, Howard. Apparatus and methods of amplifying engine emissions by which to increase the overall engine efficiency. 4,484,444, Cl. 60-599.000.

Bil-Jax, Inc.: *See*—
Wyse, Mark R., 4,484,663, Cl. 187-9.00E.

Bilek, Walter: *See*—
Sitte, Helmuth; and Bilek, Walter, 4,484,503, Cl. 83-717.000.

Billings, Charles A.: *See*—
Gibbs, David A.; Hofeldt, Robert H.; and Billings, Charles A., 4,485,192, Cl. 521-54.000.

Binman, Lev. Clamp for pressing food in pan during cooking. 4,484,516, Cl. 99-349.000.

Bingisser, Josef. Exercising apparatus. 4,484,741, Cl. 272-131.000.

Bio-Products, Inc.: *See*—
Chvapil, Milos, 4,485,088, Cl. 424-28.000.

BioResearch Inc.: *See*—
Kurtz, Leonard D.; and LiCausi, Joseph, 4,484,908, Cl. 604-49.000.

Bird, James M., to Industrial Vehicles International, Inc. Carrier vehicle for seismic vibrational system. 4,484,656, Cl. 181-114.000.

Birr, Christian, to Birr, Christian. Process for preparing tert-butyl ether or ester containing polyfunctional organic compounds. 4,485,253, Cl. 560-9.000.

Biseniex, Egils A.; Dubur, Gunar Y.; Uldrikis, Yan R.; Veveris, Maris M.; Kimenis, Agris A.; and Ivanov, Evgeny V., to Institut Organicheskogo Sinteza Akademii Nauk Latviiskoi SSR. 2-(2,6-Dimethyl-3,5-diethoxycarbonyl-1,4-dihydropyridine-4-carboxamide glutaric acid its disodium salt and method of their preparation. 4,485,239, Cl. 546-321.000.

Biswas, Dipak R.: *See*—
Williams, Joseph C.; Garmon, Jeff P.; Biswas, Dipak R.; and Nath, Dilip K., 4,485,122, Cl. 427-45.100.

Black Clawson Company, The: *See*—
Puzey, Brian S. W., 4,484,714, Cl. 242-56.00A.

Blackmon, Gene D., to Dallas Venture, The, a part interest. Female external catheter. 4,484,917, Cl. 604-327.000.

Bland, Terry E.: *See*—
Funk, Gary L.; and Bland, Terry E., 4,485,070, Cl. 422-62.000.

Blank, Werner J.: *See*—
Jacobs, William, III; Parekh, Girish G.; and Blank, Werner J., 4,484,994, Cl. 204-181.00C.

Blazek, Henry F.: *See*—
Smith, Rex L.; Ankeney, D. Philip; Yates, Patrick A.; Blazek, Henry F.; and Fowler, Steven E., 4,484,523, Cl. 102-202.500.

Blechman, Abraham: *See*—
Smiley, Harry; and Blechman, Abraham, 4,484,895, Cl. 433-215.000.

Blomquist, James E.: *See*—
Wilczewski, Robert H.; and Blomquist, James E., 4,484,825, Cl. 400-124.000.

Blue Circle Projects (Proprietary) Limited: *See*—
Moore, Richard P., 4,484,728, Cl. 251-294.000.

Blytas, George C., to Shell Oil Company. Removal of oxalate ion from gas treating solutions. 4,485,082, Cl. 423-573.00R.

Blytas, George C., to Shell Oil Company. Process for the removal of oxalate ion from gas treating solutions. 4,485,083, Cl. 423-573.00R.

Bock, Manfred: *See*—
Noll, Klaus; Pedain, Josef; and Bock, Manfred, 4,485,226, Cl. 528-45.000.

Boden, Richard M.; and Licciardello, Michael, to International Flavors & Fragrances Inc. Method of augmenting or enhancing the aroma of perfumed articles using alkyl-4-cyclooctenyl carbonates. 4,485,019, Cl. 252-8.600.

Bodenseewerk Perkin-Elmer & Co., GmbH: *See*—
Riegger, Wolfgang; and Chlosta, Wolfgang, 4,484,483, Cl. 73-864.230.

Boehringer Mannheim GmbH: *See*—
Siedel, Joachim; Neumann, Ulrich; Ziegenhorn, Joachim; Batz, Hans-George; Lenz, Helmut; Pautz, Brigitte; and Albert, Winfried, 4,485,177, Cl. 436-547.000.

Boeing Company, The: *See*—
Sassi, Alessandro P., 4,485,446, Cl. 364-435.000.

Boes, Werner: *See*—
Knodler, Dietrich; Boes, Werner; Ott, Anton; and Venger, Kurt O., 4,485,443, Cl. 364-424.100.

Boger, Joshua A.; and Veber, Daniel F., to Merck & Co., Inc. Renin inhibitors containing a C-terminal amide cycle. 4,485,099, Cl. 424-177.000.

Bohl, Fred R.: *See*—
Korcusko, Peter J.; and Bohl, Fred R., 4,484,716, Cl. 242-79.000.

Bohm, Friedrich; and Sebald, Richard, to Grundig E. M.V. Television camera for indoor and outdoor use. 4,485,407, Cl. 358-229.000.

Bollin, Ernest, Jr.; and Schifreen, Richard S., to Du Pont de Nemours, E. I., and Company. Turbidimetric method for measuring protein in urine and cerebrospinal fluid. 4,485,176, Cl. 436-86.000.

Bolton, Susan K.: *See*—
Chiang, Ching; and Bolton, Susan K., 4,485,174, Cl. 436-11.000.

Bongartz, Roy C.; Johnston, Richard H.; Odasso, James J.; and Zaremski, Donald R., to Allegheny Ludlum Steel Corporation. Cathode for use in electrolytic processing solution. 4,484,996, Cl. 204-206.000.

Bonnescuelle de Lespinois, Pierre J.: *See*—
Chapin, Herbert D., Jr.; Bonnescuelle de Lespinois, Pierre J.; Young, Alan H.; and Shelly, John, 4,485,398, Cl. 358-50.000.

Boone, Gary W.; and Cochran, Michael J., to Texas Instruments Incorporated. Single-chip semiconductor unit and key input for variable function programmed system. 4,485,455, Cl. 364-900.000.

Borg-Warner Chemicals, Inc.: *See*—
Falk, John C.; and Khait, Klementina F., 4,485,219, Cl. 525-394.000.

Bortniak, Stephen: *See*—
Snaper, Alvin A.; and Bortniak, Stephen, 4,485,442, Cl. 364-414.000.

Bottieri, Joseph B., Jr. Shield plate in wheel and disc brake assembly. 4,484,667, Cl. 188-218.00A.

Boucher, Andre ; and Marand, Bernard, to Creusot-Loire. Process for the production of a composite metal part and products thus obtained. 4,484,959, Cl. 148-127.000.

Boucher, Harry H.: *See*—
Stephens, Richard J.; and Boucher, Harry H., 4,485,298, Cl. 235-50.00R.

Boutant, Jean-Jacques, to Regie Nationale des Usines Renault. Reverse drive control device for vehicle gearbox. 4,484,489, Cl. 74-473.00R.

Bowen, Leslie J.: *See*—
Klicker, Kenneth A.; Newnham, Robert E.; Cross, Leslie E.; and Bowen, Leslie J., 4,485,321, Cl. 310-322.000.

Bowers, Gilbert A.: *See*—
Walker, Evan H.; Gibbons, Gould, Jr.; and Bowers, Gilbert A., 4,484,678, Cl. 206-3.000.

Boychev, Atanas P.: *See*—
Dimitrov, Issay M.; Boychev, Atanas P.; Ralchev, Vesselin L.; and Kostov, Georgi Y., 4,484,730, Cl. 266-201.000.

Boyd, Thomas J., Jr.: *See*—
Swenson, Donald A.; Boyd, Thomas J., Jr.; Potter, James M.; and Stovall, James E., 4,485,346, Cl. 328-233.000.

Bradley, Steven A.: *See*—
Janikowski, Daniel S.; and Bradley, Steven A., 4,485,153, Cl. 428-688.000.

Braksmayer, Diza P., to FMC Corporation. s-Butyl bis(3-hydroxypropyl) phosphine oxide. 4,485,262, Cl. 568-15.000.

Brandell, John T., to Halliburton Company. Safety joint. 4,484,633, Cl. 166-301.000.

Braschel, Volker, to Robert Bosch GmbH. Method of braking a vehicle having a wheel anti brake-lock or anti-skid system. 4,485,445, Cl. 364-426.000.

Braunstein, Arie; Sohar, Ezra; and Levite, Theodore. Measurement of solar radiation. 4,485,306, Cl. 250-372.000.

Bravo, Francesco, to Bravo S.p.A. Homogenizer device, in particular for the production of whipped cream. 4,484,597, Cl. 137-512.100.

Bravo S.p.A.: *See*—
Bravo, Francesco, 4,484,597, Cl. 137-512.100.

Brazdil, James F., Jr.; Attig, Thomas G.; and Grasselli, Robert K., to Standard Oil Company, The. Ammoxidation of methanol to produce hydrogen cyanide. 4,485,079, Cl. 423-376.000.

Bremmer, Robert A., to Magnetic Peripherals, Inc. System and method of locating the center of a track on a magnetic storage disk. 4,485,418, Cl. 360-77.000.

Brenholt, David L.; Fischer, Paul M.; and Mattson, Kenneth V., to Donaldson Company, Inc. Radial tube centrifugal fan. 4,484,860, Cl. 416-182.000.

Brennan, John J.; Chyung, Kenneth; and Taylor, Mark P., to United Technologies Corporation. Reaction inhibited-silicon carbide fiber reinforced high temperature glass-ceramic composites. 4,485,179, Cl. 501-32.000.

Brennan, Michael E.; and Speranza, George P., to Texaco Inc. Alkoxylated Mannich condensates having fire retardancy properties and manufacture of rigid polyurethane foam therewith. 4,485,195, Cl. 521-167.000.

Brennan, Michael E.: *See*—
Speranza, George P.; Grigsby, Robert A., Jr.; and Brennan, Michael E., 4,485,196, Cl. 521-172.000.

Breslow, Jeffrey D.; Zaruba, John V.; and Rosenwinkel, Donald A., to Marvin Glass & Associates. Board game with playing piece dispenser. 4,484,747, Cl. 273-243.000.

Brest Van Kempen, Carel J. H.: *See*—
Mahyera, Anil; Brest Van Kempen, Carel J. H.; Sweet, Robert M.; and Davidson, Amber C., 4,484,643, Cl. 175-206.000.

Brezina, Walter: *See*—
Steinmetz, Guenter; Brezina, Walter; and Steenbeck, Ulf, 4,484,666, Cl. 188-165.000.

Bridger Scientific, Inc.: *See*—
Characklis, William G.; and Roe, Frank L., 4,485,450, Cl. 364-550.000.

Bridgestone Cycle Co., Ltd.: *See*—
Takamiya, Kikuzo; Todoroki, Hiroshi; and Taniguchi, Shuichi, 4,484,756, Cl. 280-281.00R.

Bridgestone Tire Company Limited: *See*—
Kawaida, Shinji; and Ozawa, Chiaki, 4,484,973, Cl. 156-400.000.
Kawamoto, Hisao, 4,484,966, Cl. 156-126.000.

Brignac, David G.; and Swan, George A., to Exxon Research and Engineering Co. Preparation of polymetallic catalysts. 4,485,188, Cl. 502-215.000.

Brill, Edward F. Golf putter. 4,484,746, Cl. 273-167.00A.

Briney, Gary C.; and Fuerniss, Stephen J., to Du Pont de Nemours, E. I., and Company. Aqueous developable photopolymerizable elements. 4,485,167, Cl. 430-281.000.

Brio Toy AB: *See*—
Petersson, Nils A. I., 4,484,407, Cl. 446-122.000.

Briskin Manufacturing Company: *See*—
Kerber, Robert, 4,484,537, Cl. 118-686.000.

British Petroleum Company p.l.c., The: *See*—
Rutter, Paul R.; and Veal, Christopher J., 4,484,929, Cl. 44-51.000.

Brockway, Brock F.; Moretti, Anthony L.; Pellolio, Anselmo P.; and Rasmussen, Jimmie, to E. D. Bullard Company. Loose fitting supplied air respirator hood. 4,484,575, Cl. 128-201.230.

Brode, George L.: *See*—
Fan, You-Ling; and Brode, George L., 4,485,209, Cl. 524-801.000.

Brower, Ben C., to A. W. Manufacturing Inc. Apparatus for filleting fish. 4,484,375, Cl. 17-56.000.

Brown, Curtis W. Intravenous catheter restraint. 4,484,914, Cl. 604-180.000.

Brownstein, Scott A., to Eastman Kodak Company. Film video player with zoom and scan. 4,485,406, Cl. 358-227.000.

Brule, Gerard: *See*—
Roger, Loic; Maubois, Jean-Louis; Brule, Gerard; and Piot, Michel, 4,485,040, Cl. 260-122.000.

Brunswick Corporation: *See*—
Hale, David J., 4,484,442, Cl. 60-313.000.

BTU Engineering Corporation: *See*—
Sarkozy, Robert F.; and Simson, Morris, 4,484,538, Cl. 118-729.000.

Buch, Veit: *See*—
Bender, Heinz; Buch, Veit; Beyerle, Rudi; and Kuhlein, Klaus, 4,485,240, Cl. 548-449.000.

Buchheit, Otto K., to Mannesmann Aktiengesellschaft. Braking device for axially receiving and transversely discharging rolled bars. 4,484,465, Cl. 72-250.000.

Buchmeier, Robert B. Universal extension bracket for a safety belt attachment for automobiles. 4,484,766, Cl. 280-808.000.

Buchwalder, Jean-Pierre, to Cycles Peugeot. Device for modulating the flow of the gases in an internal combustion engine exhaust muffler. 4,484,659, Cl. 181-266.000.

Buhler, Niklaus; Reber, Jean F.; Meier, Kurt; and Rusek, Milos, to Ciba-Geigy Corporation. Process for the production of hydrogen by means of heterogeneous photoredox catalysis. 4,484,992, Cl. 204-157.10R.

Bui, Duc T.: *See*—
Angelo, Arthur L.; Patel, Baboobhai S.; and Bui, Duc T., 4,484,991, Cl. 204-129.000.

Bullano, Gerald A.: *See*—
Neiditch, David S.; Bullano, Gerald A.; DiLullo, Robert J.; and Ofstein, David E., 4,485,210, Cl. 525-53.000.

Bullock, Joseph J., III, to Three Sisters Ranch Enterprises Ptnrshp. Tamper-proof container closure for use with container necks sealed with foil seal discs. 4,484,687, Cl. 215-256.000.

Bultman, David A.; and Olson, Maynard H., to Minnesota Mining and Manufacturing Company. Mist suppressant for solvent extraction metal electrowinning. 4,484,990, Cl. 204-106.000.

Bung, Richard; Gans, Karl; Schreyer, Gerold; and Welzel, Gerhard, to BASF Aktiengesellschaft. Reproducible production of shaped articles of various geometries from polymer dispersions, melts or solutions. 4,485,055, Cl. 264-8.000.

Burandt, Corliss O., to Investment Rarities, Incorporated. Variable valve operating mechanism for internal combustion engines. 4,484,546, Cl. 123-90.150.

Burandt, Corliss O., to Investment Rarities, Incorporated. Variable fuel delivery system for internal combustion engines. 4,484,558, Cl. 123-452.000.

Burger, Helga: *See*—
Rossmann, Christian; and Burger, Helga, 4,485,027, Cl. 252-90.000.

Burnard, Gerald K.: *See*—
James, Granville C.; and Burnard, Gerald K., 4,484,937, Cl. 55-223.000.

Burnell, Howard P.: *See*—
Murray, Harley W.; Burnell, Howard P.; and Murray, David H., 4,484,758, Cl. 280-442.000.

Burnside, Walter M., to Bally Manufacturing Corporation. Amusement apparatus with high capacity token storage. 4,484,592, Cl. 133-5.00R.

Burt, Daryl D., to Adolph Coors Company. Flexible disk damper. 4,484,562, Cl. 126-285.00R.

Burzlaff, Henry A.; and Holoubek, George H., to Thatcher Plastic Packaging, Inc. Method of applying decorative foil to materials. 4,484,970, Cl. 156-233.000.

Busch, Bjarne G. Method and apparatus for handling bags at a checkout counter. 4,484,662, Cl. 186-66.000.

Bush, Sydney J. Device for use in carrying a child. 4,484,700, Cl. 224-161.000.

Buss AG: *See*—
Franz, Peter; and Seipp, Hans, 4,485,060, Cl. 264-102.000.

Buxton, James L., to S R I International. Variable delay memory system. 4,484,477, Cl. 73-626.000.

Byerley, Wilbur M., to Westinghouse Electric Corp. Moisture separator reheater with round tube bundle. 4,485,069, Cl. 376-405.000.

Byron, Kevin C., to International Standard Electric Corporation. Delay equalization for single mode optical fibers. 4,484,795, Cl. 350-96.190.

C. Reichert Optische Werke AG: *See*—
Sitte, Helmuth; and Bilek, Walter, 4,484,503, Cl. 83-717.000.

C. Uyemura & Co., Ltd.: *See*—
Sakai, Hiromitsu, 4,484,936, Cl. 55-159.000.

Cadic, Raymond, to Societe d'Exploitation des Procedes Felix Amiot. Devices for selectively coupling to a shaft to be driven two separate driving members. 4,484,492, Cl. 74-625.000.

Cadillac Gage Company: *See*—
Appelblatt, Irving; Jackson, Theodore A.; and Crabtree, James D., 4,484,765, Cl. 280-725.000.

Caffaro S.p.A.: *See*—
Casale, Liborio; and Donelli, Giordano, 4,485,050, Cl. 260-465.00G.

Caldares, Patricia L. Multiple place setting tablecloth arrangement. 4,484,529, Cl. 108-90.000.

Calder, Oliver J., to Graham, Phyllis. Spray tip. 4,484,707, Cl. 239-119.000.

Calgon Corporation: *See*—
Sherwood, Nancy S.; Costello, Christine A.; and Matz, Gary F., 4,484,631, Cl. 166-274.000.

Calkins, George B.: *See*—
Sarnoff, Stanley J.; Calkins, George B.; and Lopez, Claudio, 4,484,910, Cl. 604-136.000.

Calvert, James W.: *See*—
Wiatt, James G.; Calvert, James W.; Belcher, Samuel L.; and Smith, Roger D., 4,484,884, Cl. 425-534.000.

Campau, Daniel N. Liquid level control device. 4,484,601, Cl. 137-805.000.

Campi, Morris; Farrar, Frederick; and Shames, Daniel, to United States of America, Army. Variable microwave stripline power divider. 4,485,362, Cl. 333-128.000.

Canon Kabushiki Kaisha: *See*—
Kataoka, Hiroyuki; Yamada, Masanori; and Suzuki, Nobuyuki, 4,484,807, Cl. 354-415.000.
Kimura, Takeshi; Watanabe, Satoshi; Hirano, Hirofumi; and Sasaki, Setsuo, 4,484,520, Cl. 101-99.000.
Nakahata, Kimio; Tajima, Hatsuo; Iwami, Naoki; Masuda, Shunichi; Shimizu, Katsuichi; Kawatsura, Yoshihiro; Suzuki, Koji; and Yokomizo, Yoshikazu, 4,484,811, Cl. 355-14.0CH.
Tamura, Tetsuo, 4,484,800, Cl. 350-429.000.

Caple, Gerald; and Layton, Richard G., to University Patents, Inc. Prevention of freezing at moderate supercooling using synthetic polymeric ice nucleation inhibitors. 4,484,409, Cl. 47-2.000.

Carlton Company: *See*—
Atkinson, Renwick S., 4,484,504, Cl. 83-833.000.

Carnegie-Mellon University: *See*—
Sproull, Robert; and Frank, Edward H., 4,485,472, Cl. 371-15.000.

Carre , Jean-Jacques; and Levrai, Roland, to Societe Anonyme DBA. Pressure generator unit for hydraulic braking system. 4,484,671, Cl. 188-352.000.

Carroll, Thomas J.; Feinerman, Deborah; Huzinec, Robert J.; and Piccolo, Dominic J., to Warner-Lambert Company. Gum composition with plural time releasing flavors and method of preparation. 4,485,118, Cl. 426-5.000.

Carruthers, James D.: *See*—
Hettinger, William P., Jr.; Beck, H. Wayne; Carruthers, James D.; Cornelius, Edward B.; Kovach, Stephen M.; and Palmer, James L., 4,485,184, Cl. 502-67.000.

Carter, James H., II: *See*—
Ledis, Stephen L.; Sena, Ted; Crews, Harold R.; and Carter, James H., II, 4,485,175, Cl. 436-63.000.

Casale, Liborio; and Donelli, Giordano, to Caffaro S.p.A. Process for the continuous production of tetrachlorophthalonitrile in a fluidized bed reactor. 4,485,050, Cl. 260-465.00G.

Casimiro, A. Robert: *See*—
Wallet, Bill J.; and Casimiro, A. Robert, 4,484,610, Cl. 152-209.00R.

Casio Computer Co., Ltd.: *See*—
Kita, Kazunori, 4,485,463, Cl. 368-82.000.
Sato, Kunio, 4,484,506, Cl. 84-1.010.

Caspar O. H. Mesaner: *See*—
Ebner, Walter, 4,484,502, Cl. 83-651.100.

Cassella Aktiengesellschaft: *See*—
Armbrecht, Norbert; Bauer, Wolfgang; and Ribka, Joachim, 4,485,042, Cl. 534-796.000.
Bender, Heinz; Buch, Veit; Beyerle, Rudi; and Kuhlein, Klaus, 4,485,240, Cl. 548-449.000.

Cavanaugh, John B.: *See*—
Kimberley, John A.; Cavanaugh, John B.; and Kraus, Richard D., 4,484,867, Cl. 417-499.000.

Cazzaniga S.p.A.: *See*—
Knauss, Uwe, 4,485,449, Cl. 364-510.000.

CBS Inc.: *See*—
Balaska, Richard K.; Hunter, Robert L.; and Robinson, Scott S., Jr., 4,485,457, Cl. 364-900.000.

Ceil Clean Corporation, Inc.: *See*—
King, Jeffrey J., 4,485,028, Cl. 252-99.000.

Celanese Corporation: *See*—
Choe, Eui W.; and Conciatori, Anthony B., 4,485,232, Cl. 528-207.000.
David, Lawrence D.; and Arons, Richard M., 4,485,085, Cl. 423-594.000.
Fruchey, Olan S., 4,485,046, Cl. 260-413.000.
Fruchey, Olan S.; and de la Garza, Edward M., 4,485,047, Cl. 260-413.000.

Celotex Corporation, The: *See*—
Frentzel, Richard L.; and Moss, Ernest K., 4,485,194, Cl. 521-129.000.

Centri-Spray Corporation: *See*—
Plumridge, Robert W.; and Patrick, James H., 4,484,676, Cl. 198-718.000.

Centrifugal Piston Expanders, Inc.: *See*—
Dibrell, Edwin W., 4,484,511, Cl. 92-67.000.

Cetus Corporation: *See*—
Tan, Yin H.; and Smith-Johannsen, Heidi, 4,485,017, Cl. 210-635.000.

CF Industries, Inc.: *See*—
Niess, Joseph, 4,484,453, Cl. 62-195.000.

Chabin Corporation: *See*—
Tengler, John N.; and Pilny, James C., 4,484,792, Cl. 339-143.00R.

Chadha, Kailash C.; and Sulkowski, Eugene, to Health Research (Roswell Park Division). Method for the production and purification of human leukocyte interferon. 4,485,038, Cl. 260-112.00K.

Chalfin, Edward: *See*—
Gonsowski, Walter S., Jr.; and Chalfin, Edward, 4,485,301, Cl. 250-214.00A.

Chamberlain, Charles L.: *See*—
Caontos, Steve L.; and Chamberlain, Charles L., 4,485,009, Cl. 209-37.000.

Chamernik, Richard: *See*—
Kaufman, Stephen B.; Hart, John W.; and Chamernik, Richard, 4,484,920, Cl. 604-416.000.

Chang, Robert W. H., to Minnesota Mining and Manufacturing Company. Composition and method for reducing elution of therapeutic agents from teeth. 4,485,090, Cl. 424-52.000.

Chang, Wen-Hsuan; Ambrose, Ronald R.; McKeough, David T.; Porter, Samuel, Jr.; and Johnston, Byron K., to PPG Industries, Inc. Thermosetting high solids solvent-based polyester-urethane two-component coating compositions. 4,485,228, Cl. 528-84.000.

Channel Products, Inc.: *See*—
Berlincourt, Don A.; Pim, Kendall A.; and Randles, Joseph L., 4,485,324, Cl. 310-339.000.

Chapin, Herbert D., Jr.; Bonnescuelle de Lespinois, Pierre J.; Young, Alan H.; and Shelly, John, to Aquavision International Ltd. Underwater camera. 4,485,398, Cl. 358-50.000.

Characklis, William G.; and Roe, Frank L., to Bridger Scientific, Inc. Monitoring build-up of fouling deposits on surfaces of fluid handling systems. 4,485,450, Cl. 364-550.000.

Charles, Robert G.: *See*—
Pebler, Alfred R.; and Charles, Robert G., 4,485,094, Cl. 427-87.000.

Charney, Fred D. Gameboard having separable and reversible gameboard elements. 4,484,749, Cl. 273-283.000.

Chatterjea, Probir K., to Dresser Industries, Inc. Pulsation limiter for manually actuated hydraulic valve. 4,484,726, Cl. 251-51.000.

Chen, Chia-Jen. Brewing device for coffee or tea. 4,484,514, Cl. 99-282.000.

Chernitsky, Leonid D.: *See*—
Apilat, Vitaly Y.; Goriletsky, Valentin I.; Maximov, Vladimir G.; Mjulendorf, Oleg S.; Radkevich, Alexei V.; Chernitsky, Leonid D.; Eidelman, Lev G.; Vakulenko, Viktor Y., deceased; and Vakulenko, Raisa P., administrator, 4,485,072, Cl. 422-249.000.

Chesebrough-Pond's Inc.: *See*—
Curtis, Ernest S., 4,485,037, Cl. 252-546.000.

Chiang, Ching; and Bolton, Susan K., to Instrumentation Laboratory Inc. Hemoglobin-based blood gas control. 4,485,174, Cl. 436-11.000.

Chiba, Moichi: *See*—
Higuchi, Seiji; and Chiba, Moichi, 4,484,824, Cl. 384-126.000.

Chidini, Luciano: *See*—
Toti, Gabriele; Guatta, Carlo; Chidini, Luciano; and Longhi, Luciano, 4,484,901, Cl. 474-28.000.

Childs, John B.; and Fairey, Norman R., to BICC Public Limited Company. Apparatus for continuous friction-actuated extrusion. 4,484,876, Cl. 425-79.000.

Chisso Corporation: *See*—
Fujimura, Isao; Nakajima, Sadaaki; Abe, Morio; and Taniguchi, Masahiko, 4,485,141, Cl. 428-288.000.

Chitayat, Anwar, to Anorad Corporation. Robotic height sensor in laterally compliant probe. 4,484,854, Cl. 414-730.000.

Chlosta, Wolfgang: *See*—
Riegger, Wolfgang; and Chlosta, Wolfgang, 4,484,483, Cl. 73-864.230.

Choe, Eui W.; and Conciatori, Anthony B., to Celanese Corporation. Two stage melt production of high molecular weight polybenzimidazoles with phosphorous catalyst. 4,485,232, Cl. 528-207.000.

Choma, Michael A.; Husak, Philip W.; and Simko, Aladar O., to Ford Motor Company. Air-air/fuel control device. 4,484,551, Cl. 123-336.000.

Chronar Corporation: *See*—
Dalal, Vikram L.; Akhtar, M.; and Gau, Shek-Chung, 4,485,128, Cl. 427-85.000.

Chubb, Talbot A., to United States of America, Navy. Thermochemical energy transport using a hydrogen rich working fluid. 4,484,618, Cl. 165-1.000.

Chung, Harold S., to Mobil Oil Corporation. Method for recovering heavy crudes from shallow reservoirs. 4,484,630, Cl. 166-263.000.

Chvapil, Milos, to Bio-Products, Inc. Method of treatment of fibrotic lesions by topical administration of lathyrogenic drugs. 4,485,088, Cl. 424-28.000.

Chyung, Kenneth: *See*—
Brennan, John J.; Chyung, Kenneth; and Taylor, Mark P., 4,485,179, Cl. 501-32.000.

Ciba-Geigy AG: *See*—
Kniel, Paul, 4,485,043, Cl. 260-380.000.

Ciba-Geigy Corporation: *See*—
Buhler, Niklaus; Reber, Jean F.; Meier, Kurt; and Rusek, Milos, 4,484,992, Cl. 204-157.10R.
Falk, Robert A., 4,485,251, Cl. 549-513.000.
Krueger, Ulf A.; and Sury, Yel S., 4,485,221, Cl. 525-507.000.
Scharf, Hans-Dieter; Frauenrath, Herbert; Heine, Hans-Georg; Rudolph, Hans; Neuhaus, Karl-Friedrich; and Bendszus, Otto, 4,485,249, Cl. 549-347.000.

Cibie Projecteurs: *See*—
Achiaga Fustel, Victor, 4,485,430, Cl. 362-267.000.

Ciganek, Engelbert, to Du Pont de Nemours, E. I., and Company. 4-Aryl-4-piperidinecarbinols. 4,485,109, Cl. 424-267.000.

Cincinnati Electronics Corporation: *See*—
Seward, Glen, 4,485,360, Cl. 333-17.00M.

Cincinnati Milacron Inc.: *See*—
Wiatt, James G.; Calvert, James W.; Belcher, Samuel L.; and Smith, Roger D., 4,484,884, Cl. 425-534.000.

Ciparisso, Delio, to Satis Vacuum AG. Evaporation of blooming layers onto optical substrates. 4,485,124, Cl. 427-55.000.

Citizen Watch Co. Ltd.: *See*—
Kurihara, Toshio; Yasunaga, Makoto; and Kunita, Masao, 4,484,519, Cl. 101-93.050.

Clark, Anthony W.: *See*—
Sabonis, Charles J.; and Clark, Anthony W., 4,484,702, Cl. 226-74.000.

Clark, James M.: *See*—
Secrist, Duane R.; and Clark, James M., 4,484,997, Cl. 204-243.00R.

Clarke, Terence A.; Edwards, Richard B.; and Irving, Graeme N., to Lever Brothers Company. Detergent bar processing. 4,485,030, Cl. 252-108.000.

Claus, Gunter; Illgner, Klaus; and Jacques, Helmut, to VEB Werk fur Fernsehelektronik im VEB Kombinat Mikroelektronik. LED Displays with high information content. 4,485,377, Cl. 340-719.000.

Clements, Thomas W.: *See*—
Fallon, Merton R.; and Clements, Thomas W., 4,484,695, Cl. 222-23.000.

Clitherow, John W.; Price, Barry J.; Hayes, Roger; and Bays, David E., to Glaxo Group Limited. 1,2,4-Triazole-3-amines and their pharmaceutical use. 4,485,104, Cl. 424-246.000.

Coal Industry (Patents) Limited: *See*—
James, Granville C.; and Burnard, Gerald K., 4,484,937, Cl. 55-223.000.

Cochran, Michael J.: *See*—
Boone, Gary W.; and Cochran, Michael J., 4,485,455, Cl. 364-900.000.

Cocking, Harry, to Westland plc. Transmission systems. 4,484,491, Cl. 74-606.00R.

Cockman, Haggie I. Liquid separator and purification system. 4,485,013, Cl. 210-242.200.

Codiasse, Daniel: *See*—
Fiessinger, Francois; Thebault, Paul; and Codiasse, Daniel, 4,485,018, Cl. 210-716.000.

Coenen, Hubert; Hagen, Rainer; and Kriegel, Ernst, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Supercritical extraction and simultaneous catalytic hydrogenation of coal. 4,485,003, Cl. 208-10.000.

Cohen, Alan P., to Union Carbide Corporation. Process for drying gas streams. 4,484,933, Cl. 55-25.000.

Cohen, M. Roy, to Solon Automated Services, Inc. Coin diverter. 4,484,673, Cl. 194-1.00G.

Cohen, Robert E.: *See—*
Bates, Frank S.; and Cohen, Robert E., 4,485,207, Cl. 524-751.000.

Colas, Claude J.: *See—*
de Sivry, Bruno J. M.; Migliarese-Caputi, Jean-Louis; Herve, Guy J.; Baylot, Michel P.; Colas, Claude J.; and Baudet, Pierre, 4,485,344, Cl. 324-207.000.

Cole, Larry T.; Simone, Anthony D.; and Tao, Ting C., to Facet Enterprises, Inc. Fuel contamination monitor with a shut off valve. 4,485,011, Cl. 210-96.100.

Cole, Martin T., to I. E. I (Australia) Proprietary Limited. Automatic security monitoring system. 4,485,373, Cl. 340-522.000.

Coleman Company, Inc., The: *See—*
Zwick, David J., 4,484,759, Cl. 280-460.00R.

Coleman, D. Jackson: *See—*
Driller, Jack; Henriksen, William G.; Coleman, D. Jackson; and Lizzi, Frederic L., 4,484,569, Cl. 128-660.000.

Coleman, John H., to Plasma Physics Corporation. Glow discharge method and apparatus and photoreceptor devices made therewith. 4,484,809, Cl. 355-3.0DR.

Collet, Marnix G.; and van Santen, Johannes G., to U.S. Philips Corporation. Blooming suppression in a CCD imaging device. 4,485,315, Cl. 307-311.000.

Combustion Engineering, Inc.: *See—*
Ferrin, Charles R.; and Manning, William P., 4,484,934, Cl. 55-32.000.

Commissariat a l'Energie Atomique: *See—*
Moulin, Maurice; and Vivien, Jean, 4,485,068, Cl. 376-272.000.

Compagnie Francaise des Petroles: *See—*
de Sivry, Bruno J. M.; Migliarese-Caputi, Jean-Louis; Herve, Guy J.; Baylot, Michel P.; Colas, Claude J.; and Baudet, Pierre, 4,485,344, Cl. 324-207.000.

Compagnie General d'Electricite: *See—*
de Witte, Olivier, 4,485,334, Cl. 315-167.000.

Compagnie Generale des Etablissements Michelin: *See—*
Schneider, Andre , 4,484,903, Cl. 474-242.000.

Conciatori, Anthony B.: *See—*
Choe, Eui W.; and Conciatori, Anthony B., 4,485,232, Cl. 528-207.000.

Connor, Frank R. Microwave system. 4,485,384, Cl. 343-405.000.

Conoco Inc.: *See—*
Sweeney, William T.; Shaw, Rick L.; and Webb, Frederick A., 4,484,861, Cl. 417-15.000.

Consiglio, Peter A., Jr., to Parker Metal Corporation. Package for carded merchandise. 4,484,681, Cl. 206-499.000.

Consolidated Metal Products, Inc.: *See—*
Gallagher, Hugh M., Jr., 4,484,833, Cl. 403-267.000.

Constantinescu, Serban: *See—*
Constantinescu, Spiridon; and Constantinescu, Serban, 4,484,711, Cl. 239-460.000.

Constantinescu, Spiridon; and Constantinescu, Serban. Shower head adapted to stop and to allow the flow of mixed water. 4,484,711, Cl. 239-460.000.

Constructions Mecaniques F. LaRoche & Fils: *See—*
Morel, Andre , 4,484,377, Cl. 19-82.000.

Contamination Control Corp.: *See—*
McGlinsky, Robert G.; Allyn, Steve; and Whittenberg, James R., 4,484,843, Cl. 406-170.000.

Control Data Corporation: *See—*
Machesney, Gregory W., 4,485,285, Cl. 219-10.55D.
Sandusky, Randall L., 4,485,337, Cl. 318-314.000.

Cook, John P.; and Banerjee, Bani R., to Ingersoll-Rand Company. Sintered and forged article, and method of forming same. 4,484,644, Cl. 175-410.000.

Cooke, Theodore M.: *See—*
Merritt, Alfred R.; Cooke, Theodore M.; Lin, An-Chung R.; and Whitfield, Richard G., 4,484,948, Cl. 106-31.000.

Cooper Industries, Inc.: *See—*
Mayer, James R., 4,484,637, Cl. 173-2.000.

Cooperrider, Myron T.: *See—*
Baggott, George T.; and Cooperrider, Myron T., 4,484,561, Cl. 126-21.00A.

Coplin, John F.: *See—*
Pask, George; Sadler, John H. R.; and Coplin, John F., 4,484,859, Cl. 416-96.00A.

Copyer Co., Ltd., Canon Inc.: *See—*
Watanabe, Katsunori; Ohta, Shigeto; Sakai, Kiyoshi; Ishikawa, Shozo; and Kitahara, Makoto, 4,485,159, Cl. 430-58.000.

Corbett, James P. Monolithic oscillating crystal transducer systems. 4,485,323, Cl. 310-338.000.

Cording, Richard W.; and Teager, John C., Jr., to Bendix Corporation, The. Speed measurement system. 4,485,452, Cl. 364-565.000.

Cornelius, Edward B.: *See—*
Hettinger, William P., Jr.; Beck, H. Wayne; Carruthers, James D.; Cornelius, Edward B.; Kovach, Stephen M.; and Palmer, James L., 4,485,184, Cl. 502-67.000.

Cornell Research Foundation, Inc.: *See—*
Tang, Chung L.; Olsson, Nils A.; and Halbout, Jean-Marc, 4,485,473, Cl. 372-18.000.

Costello, Christine A.: *See—*
Sherwood, Nancy S.; Costello, Christine A.; and Matz, Gary F., 4,484,631, Cl. 166-274.000.

Coulter Electronics, Inc.: *See—*
Ledis, Stephen L.; Sena, Ted; Crews, Harold R.; and Carter, James H., II, 4,485,175, Cl. 436-63.000.

Cousins, Steven J.; Jones, Keith N.; and Ackerley, Kenneth E., to University College London. Shapeable matrix, and a chair using a matrix. 4,484,778, Cl. 297-284.000.

Cox, Arthur, to United States of America, Navy. Panoramic lens. 4,484,801, Cl. 350-441.000.

Cox, Donald L., to Dow Chemical Company, The. Preparation of ((6-substituted phenoxy-2-pyridinyl)-methyl)-3-(2,2-bis(trifluoromethyl)-1-ethenyl)-2,2-dimethylcyclopropane carboxylates. 4,485,238, Cl. 546-300.000.

Coy, David H.; and Murphy, William A., to Administrators of the Tulane Educational Fund. Peptides. 4,485,101, Cl. 424-177.000.

CPC International Inc.: *See—*
Gierhart, Dennis L., 4,485,172, Cl. 435-134.000.
Gierhart, Dennis L., 4,485,173, Cl. 435-134.000.

Crabb, Richard V., Jr., to Growers Ice Company. Liquid ice injection system. 4,484,448, Cl. 62-64.000.

Crabtree, James D.: *See—*
Appelblatt, Irving; Jackson, Theodore A.; and Crabtree, James D., 4,484,765, Cl. 280-725.000.

Craft, Jack: *See—*
Fang, Ta-Fang; Wittmann, Erwin J.; Harwood, Leopold A.; and Craft, Jack, 4,485,353, Cl. 331-8.000.

Crescent Metal Products, Inc.: *See—*
Baggott, George T.; and Cooperrider, Myron T., 4,484,561, Cl. 126-21.00A.

Creusot-Loire: *See—*
Boucher, Andre ; and Marand, Bernard, 4,484,959, Cl. 148-127.000.

Crews, Harold R.: *See—*
Ledis, Stephen L.; Sena, Ted; Crews, Harold R.; and Carter, James H., II, 4,485,175, Cl. 436-63.000.

Crites, Robert C.; and Youngs, Wilbur R., to Crites, Robert C., a part interest. Method and apparatus for attaching furring to columns. 4,484,427, Cl. 52-261.000.

Crosfield Data Systems, Inc.: *See—*
Griswold, Augustus W., 4,484,828, Cl. 402-60.000.

Cross, Leslie E.: *See—*
Klicker, Kenneth A.; Newnham, Robert E.; Cross, Leslie E.; and Bowen, Leslie J., 4,485,321, Cl. 310-322.000.

Crow, Robert T. Container with magnet for holding it in position. 4,484,682, Cl. 206-545.000.

Crown Zellerbach Corporation: *See—*
Reba, Imants; Schutz, Rudolph W.; and Kozbur, Nestor, 4,484,500, Cl. 83-98.000.

Csontos, Steve L.; and Chamberlain, Charles L., to Ortho Pharmaceutical Corporation. Granulation recovery device and method. 4,485,009, Cl. 209-37.000.

Cudworth, Richard W.: *See—*
Akhavi, David S.; and Cudworth, Richard W., 4,485,061, Cl. 264-161.000.

Cues, Inc.: *See—*
Guthrie, Kenneth R., 4,484,602, Cl. 138-93.000.

Curley, John J., Jr. Stabilization device. 4,484,397, Cl. 36-92.000.

Curtis, Ernest S., to Chesebrough-Pond's Inc. Nail polish remover. 4,485,037, Cl. 252-546.000.

Cycles Peugeot: *See—*
Buchwalder, Jean-Pierre, 4,484,659, Cl. 181-266.000.

D. H. Thompson Co.: *See—*
Thompson, Harry C., deceased, 4,484,368, Cl. 7-106.000.

Dagna, Giandomenico; Manini, Enrico; and Tadini, Giorgio, to Ing. C. Olivetti & C., S.p.A. Ink jet dot printer. 4,485,386, Cl. 346-75.000.

Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Imamoto, Tsunehiko; and Yanase, Akio, 4,485,299, Cl. 235-377.000.
Okushita, Masataka, 4,484,431, Cl. 53-170.000.

Daigle, Ralph L.: *See—*
Fritz, Frederick F.; and Daigle, Ralph L., 4,484,563, Cl. 126-299.00D.

Daikin Kogyo Co., Ltd.: *See—*
Ishikawa, Nobuo; and Kitazume, Tomoya, 4,484,993, Cl. 204-158.0HA.

Dalal, Vikram L.; Akhtar, M.; and Gau, Shek-Chung, to Chronar Corporation. Bandgap control in amorphous semiconductors. 4,485,128, Cl. 427-85.000.

Dalboussiere, Gerard: *See—*
Austruy, Pierre; and Dalboussiere, Gerard, 4,485,436, Cl. 364-200.000.

Dallas Venture, The: *See—*
Blackmon, Gene D., 4,484,917, Cl. 604-327.000.

Dall'Asta, Leone, to Proter S.p.A. Process for producing 2,4-diamino-(3,5-dimethoxy-4-methoxyethoxy-benzyl)-pyrimidine. 4,485,248, Cl. 544-325.000.

Dammann, Peter; Schippers, Heinz; and Bauer, Karl, to Barmag Barmer Maschinenfabrik AG. Apparatus for false twisting yarn. 4,484,437, Cl. 57-340.000.

Darden, Jerome W., to Texaco Inc. Polyalkylpolyalkoxypolysiloxane stabilizers for inorganic silicates in antifreeze/coolant formulations. 4,485,025, Cl. 252-75.000.

Darm, William J., to United Air Specialists, Inc. Oxygen reduction system and condenser apparatus with automatic defrost. 4,484,396, Cl. 34-36.000.

Darm, William J., to United Air Specialists, Inc. Two-stage gas condenser with feedback cooling. 4,484,451, Cl. 62-90.000.

David, George J. Method and apparatus for transporting potable water and other fluids. 4,484,533, Cl. 114-74.00R.

David, Lawrence D.; and Arons, Richard M., to Celanese Corporation. Process for producing ferrimagnetic spinel fibers. 4,485,085, Cl. 423-594.000.

Davidson, Amber C.: *See*—
Mahyera, Anil; Brest Van Kempen, Carel J. H.; Sweet, Robert M.; and Davidson, Amber C., 4,484,643, Cl. 175-206.000.

Davies, Robert B.; Dotson, Robert N.; and Miller, Ira, to Motorola, Inc. Bubble memory sense amplifier. 4,485,319, Cl. 307-530.000.

Davies, Robert B.; Dotson, Robert N.; and Null, Michael W., to Motorola, Inc. Current amplifier. 4,485,352, Cl. 330-288.000.

Davies, Thomas J., Jr., to Fairchild Camera & Instrument Corp. Dynamic TTL input comparator for CMOS devices. 4,485,317, Cl. 307-475.000.

Davis, Fred R., to Midwest Elastomers, Inc. Method of modifying asphalt with thermoplastic polymers, ground rubber and composition produced. 4,485,201, Cl. 524-68.000.

Davis, Irwin J.: *See*—
Perlinski, Witold; Davis, Irwin J.; and Romanick, John F., 4,485,200, Cl. 523-409.000.

Dawant, Marcel L.; and Guillemain, Pierre, to Societe Europeenne de Propulsion. Projectile for recoilless weapon. 4,484,524, Cl. 102-437.000.

Dawes, James W.; and Ryan, Donald J., to Du Pont de Nemours, E. I., and Company. Process for extruding polymers. 4,485,062, Cl. 264-171.000.

de la Garza, Edward M.: *See*—
Fruchey, Olan S.; and de la Garza, Edward M., 4,485,047, Cl. 260-413.000.

Dean, Barry D., to Atlantic Richfield Company. Molding composition. 4,485,215, Cl. 525-205.000.

DeBoer, Charles D.: *See*—
Finn, Robert G.; and DeBoer, Charles D., 4,485,165, Cl. 430-223.000.

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de Cremoux, Baudouin: *See*—
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Deegan, Dennis I.: *See*—
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Michel, Raymond, 4,484,864, Cl. 417-477.000.

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Nishimaki, Toshihiko; Nakaminato, Yoshikazu; and Fujimoto, Katsuhiko, 4,485,476, Cl. 373-2.000.

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Pitts, Warren R., 4,484,401, Cl. 40-2.00R.
Price, Lewis C., Jr., 4,484,827, Cl. 401-205.000.

DeRusha, Mark A.; Schultz, Thomas E.; and Luchio, Stephen W., to Keene Corporation. Self-rolled foam tape without release layer and method of making same. 4,484,574, Cl. 128-156.000.

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Despins, Maurice, to Omniart Distributions Inc. Sealant applicator for joining planar materials. 4,484,976, Cl. 156-578.000.

Deuring, Hans, to Goetze AG. Crankcase housing cover with sealing means. 4,484,751, Cl. 277-12.000.

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Floyd, Middleton B., Jr.; and DeVries, Vern G., 4,485,114, Cl. 424-315.000.

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Shibuya, Tsunenori; and Iio, Masahiro, 4,484,868, Cl. 418-15.000.

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Shingu, Hideo; Ishihara, Keiichi; Doi, Akira; and Fujimori, Naoji, 4,485,080, Cl. 423-446.000.

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Dolce, Augustine J., to Niagara Frontier Services. High efficiency refrigeration system. 4,484,450, Cl. 62-89.000.

Dominguez, Richard J. G.: *See*—
Waddill, Harold G.; and Dominguez, Richard J. G., 4,485,229, Cl. 528-111.000.

Donaldson Company, Inc.: *See*—
Brenholt, David L.; Fischer, Paul M.; and Mattson, Kenneth V., 4,484,860, Cl. 416-182.000.

Donelli, Giordano: *See*—
Casale, Liborio; and Donelli, Giordano, 4,485,050, Cl. 260-465.00G.

Donn Incorporated: *See*—
Sauer, Gale E., 4,484,428, Cl. 52-311.000.
Simms, Lawrence P., 4,484,426, Cl. 52-239.000.

Donofrio, Robert L.; Rollason, Peter H.; and Fisher, Mahlon B., to North American Philips Consumer Electronics Corp. CRT Incorporating x-ray absorbing means. 4,485,329, Cl. 313-478.000.

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Vanek, Kenneth F.; and Dooling, Joseph S., 4,484,595, Cl. 137-296.000.

Dotson, Robert N.: *See*—
Davies, Robert B.; Dotson, Robert N.; and Miller, Ira, 4,485,319, Cl. 307-530.000.
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Marchal, Paul H.; and Doucin, Guy F., 4,484,889, Cl. 432-219.000.

Douthitt Corporation: *See*—
Maher, Robert J.; and Tooson, Ronald, 4,484,813, Cl. 355-93.000.

Dow Chemical Company, The: *See*—
Cox, Donald L., 4,485,238, Cl. 546-300.000.
Hefner, Robert E., Jr.; and Hefner, Robert E., Sr., 4,485,220, Cl. 525-411.000.
Olstowski, Franciszek; and Peffley, Richard D., 4,485,031, Cl. 252-182.000.
Olstowski, Franciszek; and Peffley, Richard D., 4,485,032, Cl. 252-182.000.
Peet, Norton P.; and Sunder, Shyam, 4,485,106, Cl. 424-250.000.
Rubens, Louis C.; and Alexander, Willard E., 4,485,193, Cl. 521-58.000.

Draft Systems, Inc.: *See*—
Fallon, Merton R.; and Clements, Thomas W., 4,484,695, Cl. 222-23.000.

Dragerwerk Aktiengesellschaft: *See*—
Albarda, Scato, 4,484,576, Cl. 128-202.220.

Dresser Industries, Inc.: *See*—
Ayers, David B., 4,484,639, Cl. 175-4.560.
Chatterjea, Probir K., 4,484,726, Cl. 251-51.000.
Fertl, Walter H.; and Ruhovets, Naum, 4,484,470, Cl. 73-152.000.
Scruggs, David M., 4,484,750, Cl. 277-9.000.

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Drumheller, Carl E., to Microscience Systems Corp. Inking system for producing circuit patterns. 4,485,387, Cl. 346-140.00R.

D'Silva, Themistocles D. J., to Union Carbide Corporation. Carbamic pesticidal compositions. 4,485,113, Cl. 424-304.000.

Dubur, Gunar Y.: *See*—
Biseniex, Egils A.; Dubur, Gunar Y.; Uldrikis, Yan R.; Veveris, Maris M.; Kimenis, Agris A.; and Ivanov, Evgeny V., 4,485,239, Cl. 546-321.000.

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Smith, Russell P.; Dunlop, Guy R.; and Miles, Carol L., 4,485,485, Cl. 382-65.000.

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Potter, William D.; Barclay, Andrew C.; Dunning, Reginald; and Parry, Richard J., 4,484,949, Cl. 106-85.000.

Duong, Tuan K.; Lefort, Emmanuel; and Bellanger, Maurice G., to Telecommunications Radioelectriques et Telephoniques T.R.T. Acoustic feedback cancelling electro-acoustic transducer network. 4,485,272, Cl. 179-81.00B.

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Bollin, Ernest, Jr.; and Schifreen, Richard S., 4,485,176, Cl. 436-86.000.
Briney, Gary C.; and Fuerniss, Stephen J., 4,485,167, Cl. 430-281.000.
Ciganek, Engelbert, 4,485,109, Cl. 424-267.000.
Dawes, James W.; and Ryan, Donald J., 4,485,062, Cl. 264-171.000.
Gannett, Thomas P.; Gibbs, Hugh H.; and Kassal, Robert J., 4,485,140, Cl. 428-260.000.
Good, Alfred N., 4,485,063, Cl. 264-235.600.
Johnson, Hardie B., 4,484,791, Cl. 339-99.00R.
McKinney, Ronald J., 4,485,256, Cl. 560-202.000.
Rucker, Klaus G., 4,484,960, Cl. 149-22.000.
Sheeran, Edward T., Jr., 4,484,907, Cl. 994-85.000.
Squire, Edward N., 4,485,250, Cl. 549-455.000.
Tseng, Chi-Ping, 4,484,939, Cl. 71-92.000.

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Lees, Wayne L., 4,484,691, Cl. 220-89.00A.

Durkan, Gerald, to Kircaldie, Randall and McNab. Respirator apparatus and method. 4,484,578, Cl. 128-204.240.

Durvasula, Visweswara R., to Upjohn Company, The. 3-Alkanoyloxyphthalides. 4,485,247, Cl. 549-310.000.

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Dynamics Corporation of America: *See*—
Hodgson, Emory R., Jr., 4,484,636, Cl. 172-454.000.

E.C.H. Will (GmbH & Co.): *See*—
Ramcke, Bernd, 4,484,501, Cl. 83-255.000.

E. D. Bullard Company: *See*—
Brockway, Brock F.; Moretti, Anthony L.; Pellolio, Anselmo P.; and Rasmussen, Jimmie, 4,484,575, Cl. 128-201.230.

E-Systems, Inc.: *See*—
Andren, Carl F.; Mosley, William H., Jr.; and Sanders, David E., 4,485,358, Cl. 332-23.00R.

Eames, Frederick M., Jr., to Harris Data Communications Inc. Dynamic focusing circuit for a cathode ray tube. 4,485,335, Cl. 315-382.000.

Easley, Othel D., Jr.; and Wooten, John T. Tube emptying apparatus. 4,484,370, Cl. 15-95.000.

Eastman Kodak Company: *See*—
Armour, Eugene A.; and Munshi, Jal F., 4,485,164, Cl. 430-214.000.
Brownstein, Scott A., 4,485,406, Cl. 358-227.000.
Finn, Robert G.; and DeBoer, Charles D., 4,485,165, Cl. 430-223.000.
Scozzafava, Michael; and Molaire, Michel F., 4,485,161, Cl. 430-64.000.

Eaton Corporation: *See*—
Franz, Rudolph J., 4,484,619, Cl. 165-2.000.

Ebata, Yoshihiro; Tamari, Nobuyuki; Kinoshita, Makoto; and Toibana, Yasuo, to Agency of Industrial Science & Technology Ministry of International Trade & Industry. Method for adhesion of silicon nitride parts. 4,484,972, Cl. 156-325.000.

Ebata, Yoshikazu: *See*—
Nomoto, Reishi; Takahashi, Masayoshi; and Ebata, Yoshikazu, 4,484,580, Cl. 128-340.000.

Ebner, Walter, to Caspar O. H. Messner. Wire saw. 4,484,502, Cl. 83-651.100.

Eckhardt, Richard. Gas flow metering. 4,484,479, Cl. 73-861.470.

Edgren, David: *See*—
Swanson, David; and Edgren, David, 4,484,921, Cl. 604-892.000.

Edwards, Richard B.: *See*—
Clarke, Terence A.; Edwards, Richard B.; and Irving, Graeme N., 4,485,030, Cl. 252-108.000.

EG&G, Inc.: *See*—
Goldberg, Seymour, 4,485,333, Cl. 315-149.000.

Ehresmann, Ewald. Adjustable magnetic water treatment system. 4,485,012, Cl. 210-223.000.

Eichhorn, Uwe: *See*—
Gliemeroth, Georg; Eichhorn, Uwe; Holzel, Eva; Ross, Ludwig; Krolla, Hans-Georg; Speit, Burkhard; Geiler, Volkmar; and Hoffmann, Hans-Jurgen, 4,485,178, Cl. 501-13.000.

Eidelman, Lev G.: *See*—
Apilat, Vitaly Y.; Goriletsky, Valentin I.; Maximov, Vladimir G.; Mjulendorf, Oleg S.; Radkevich, Alexei V.; Chernitsky, Leonid D.; Eidelman, Lev G.; Vakulenko, Viktor Y., deceased; and Vakulenko, Raisa P., administrator, 4,485,072, Cl. 422-249.000.

Einstabland, Thomas, to Ingenior Thor Furuholmen A/S; A/S Hoyer-Ellefsen; and Ingenior F. Selmer A/S. Offshore platform structure for artic waters. 4,484,841, Cl. 405-212.000.

Election Data Corporation: *See*—
Stephens, Richard J., 4,484,787, Cl. 312-239.000.
Stephens, Richard J.; and Boucher, Harry H., 4,485,298, Cl. 235-50.00R.

Electricite de France (Service National) French National Service: *See*—
Gueraud, Roger, 4,484,447, Cl. 60-687.000.

Elektro-Mechanik GmbH: *See*—
Weis, Alfred, 4,484,496, Cl. 74-804.000.

Ellis, Stafford M.; and Keay, James P. M., to Marconi Avionics Limited. Clamp arrangements. 4,484,381, Cl. 24-523.000.

Emerson Electric Co.: *See*—
Licinit, Edward J.; and Sullivan, Paul G., 4,484,472, Cl. 73-204.000.

Emhart Industries, Inc.: *See*—
Voland, Elmo W.; Adams, George W.; and Smock, Steven W., 4,485,281, Cl. 200-38.00R.

Emmerich, Kenneth C., to Fansteel Inc. Retainer and wear sleeve for rotating mining bits. 4,484,783, Cl. 299-86.000.

Energy Conversion Devices, Inc.: *See*—
Izu, Masatsugu; and Ovshinsky, Herbert C., 4,485,125, Cl. 427-74.000.
Izu, Masatsugu; and Nath, Prem, 4,485,264, Cl. 136-244.000.
Ovshinsky, Stanford R.; and Izu, Masatsugu, 4,485,389, Cl. 357-2.000.

Energy Research Corporation: *See*—
Moseley, Scott A., 4,485,157, Cl. 429-251.000.

Engel, Hinrich; and Koch, Eckhard, to Vereinigte Flugtechnische Werke GmbH. Actuation of a cargo restrainer. 4,484,846, Cl. 410-69.000.

Engelhaupt, Bernd, to Krings, Josef. Apparatus and method for centrally installing a shoring column into a predrilled ground hole. 4,484,842, Cl. 405-232.000.

English, Larry W., to Hercules Incorporated. Blow molding machine. 4,484,882, Cl. 425-529.000.

English, Thomas A., to Interior Security Corp. Interior security door panel. 4,484,410, Cl. 49-63.000.

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Tam, Patrick S.; and Kittrell, James R., 4,485,007, Cl. 208-221.000.

Epifanio, William E., II: *See*—
Rottenberg, David A.; Miodownik, Saul; and Epifanio, William E., II, 4,484,582, Cl. 128-630.000.

Epis, Olivo, to Fimtessile Fabbrica Italiana Macchinario Tessile SpA. Punched paper tape feed device for loom dobbies. 4,484,605, Cl. 139-330.000.

Erasov, Fedor N., to Zaporozhsky Konstruktorskotekhnologichesky Institut Selskokhozyaistvennoco Mashinostroenia. Planetary hydraulic motor with irregularly arranged valving parts. 4,484,870, Cl. 418-61.00B.

Erbes, Kurt: *See*—
Herwig, Walter; Decker, Rudolf; Sikora, Helga; and Erbes, Kurt, 4,485,166, Cl. 430-260.000.

Erickson, Herbert V. Tap water preheater. 4,484,564, Cl. 126-365.000.

Ericsson, Sylve J. D., to Svecia Silkscreen Maskiner AB. Method and arrangement for registration of print on a material. 4,485,447, Cl. 364-469.000.

Erowa AG: *See*—
Schneider, Rudolf, 4,485,288, Cl. 219-69.00W.

Essilor International Cie Generale d'Optique: *See*—
Mignen, Bernard, 4,484,804, Cl. 351-168.000.

Etablissements Trouvay and Cauvin S.A.: *See*—
Henocque, Jean; and Bessard, Henri, 4,484,536, Cl. 116-275.000.

Ethyl Corporation: *See*—
Everly, Charles R.; and Roper, Jerry M., 4,485,051, Cl. 260-465.00F.

Evans, Francis C., to Legato Drilling Ltd. Reverse action auger. 4,484,642, Cl. 175-65.000.

Evans, Howard E.: *See*—
Balthis, Vernon M.; Evans, Howard E.; and Minor, James C., 4,485,066, Cl. 264-341.000.

Evenson, John L. Drip pan for vehicles. 4,484,661, Cl. 184-106.000.

Everly, Charles R.; and Roper, Jerry M., to Ethyl Corporation. Preparation of 4-(α-hydrocarbyl-α-cyanomethyl)-2,6-di-substituted phenols. 4,485,051, Cl. 260-465.00F.

Evrard, Willy I. A. J. Gas producer. 4,484,930, Cl. 48-76.000.

Excelermatic Inc.: *See*—
Kraus, Charles E., 4,484,487, Cl. 74-200.000.

Exxon Research and Engineering Co.: *See*—
Biceroglu, Omer, 4,485,006, Cl. 208-216.00R.
Brignac, David G.; and Swan, George A., 4,485,188, Cl. 502-215.000.
Maa, Peter S.; Veluswamy, Lavanga R.; and Vernon, Lonnie W., 4,485,008, Cl. 208-10.000.
Merritt, Alfred R.; Cooke, Theodore M.; Lin, An-Chung R.; and Whitfield, Richard G., 4,484,948, Cl. 106-31.000.

Facet Enterprises, Inc.: *See*—
Cole, Larry T.; Simone, Anthony D.; and Tao, Ting C., 4,485,011, Cl. 210-96.100.

FAG Kugelfischer Georg Schaefer & Co.: *See*—
Peuker, Karl, 4,484,823, Cl. 374-27.000.

Fairchild Camera & Instrument Corp.: *See*—
Davies, Thomas J., Jr., 4,485,317, Cl. 307-475.000.
Keyser, Thomas, 4,484,978, Cl. 156-643.000.
Venkateswaran, Kalyanasundaram, 4,485,459, Cl. 365-200.000.

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Childs, John B.; and Fairey, Norman R., 4,484,876, Cl. 425-79.000.

Falk, John C.; and Khait, Klementina F., to Borg-Warner Chemicals, Inc. Phenylene ether copolymer aromatic polycarbonate blends. 4,485,219, Cl. 525-394.000.

Falk, Robert A., to Ciba-Geigy Corporation. Process for the preparation of bis(perfluoroalkyl-alkylthio)alkanoic acids and lactone intermediates thereof. 4,485,251, Cl. 549-513.000.

Fallon, Merton R.; and Clements, Thomas W., to Draft Systems, Inc. Safety pressure reducing regulator. 4,484,695, Cl. 222-23.000.

Fan, You-Ling; and Brode, George L., to Union Carbide Corporation. Process for producing a polymer water-in-oil emulsion. 4,485,209, Cl. 524-801.000.

Fang, Ta-Fang; Wittmann, Erwin J.; Harwood, Leopold A.; and Craft, Jack, to RCA Corporation. PLL Oscillator synchronizing system with matrix for phase correction. 4,485,353, Cl. 331-8.000.

Fansteel Inc.: *See*—
Emmerich, Kenneth C., 4,484,783, Cl. 299-86.000.

Fanuc Ltd.: *See*—
Kawada, Shigeki; Oyama, Shigeaki; Nakamura, Kosei; and Nakano, Jiro, 4,484,320, Cl. 310-217.000.

Fanuc Ltd: *See*—
Matsuura, Hitoshi; Yamazaki, Etsuo; and Sakurai, Hiroshi, 4,485,338, Cl. 318-569.000.

Farrar, Frederick: *See*—
Campi, Morris; Farrar, Frederick; and Shames, Daniel, 4,485,362, Cl. 333-128.000.

Fass, Rudolf: *See*—
Hoyer, Ernst; Meininger, Fritz; and Fass, Rudolf, 4,485,041, Cl. 534-637.000.

Fastino, Lorenzo. Variable low frequency sinusoidal oscillator using simulated inductance. 4,485,356, Cl. 331-132.000.

Federal-Mogul Corporation: *See*—
Bentley, Gustavus A., 4,484,752, Cl. 277-25.000.

Fegley, Charles R.; Regneth, Lorenz; and Tamashasky, Joseph A., to AT&T Technologies, Inc. Bonding a workpiece to a body. 4,485,290, Cl. 219-85.0CA.

Feinerman, Deborah: *See*—
Carroll, Thomas J.; Feinerman, Deborah; Huzinec, Robert J.; and Piccolo, Dominic J., 4,485,118, Cl. 426-5.000.

Fekete, Ferenc, to Mattel, Inc. Stylus shielding and unshielding apparatus for a phonograph. 4,485,466, Cl. 369-177.000.

Feklin, Valentin I.; Shvets, Viktor B.; and Mazo, Boris M., to Dnepropetrovsky Inzhenerno-Stroitelny Institut. Tool for formation of holes in macroporous compressible soils. 4,484,640, Cl. 175-19.000.

Feldmuhle Aktiengesellschaft: *See*—
Fuchs, Karl-Dieter; and Krohn, Ulrich, 4,484,981, Cl. 162-252.000.

Ferdinand, Irwin J.; Sylvan, Richard; and Peterson, Michael, to Hirsh Company. Router table. 4,484,608, Cl. 144-134.00B.

Ferrin, Charles R.; and Manning, William P., to Combustion Engineering, Inc. Physical solvent for gas sweetening. 4,484,934, Cl. 55-32.000.

Ferro Corporation: *See*—
Kammann, Karl P., Jr.; and Thompson, Paul F., 4,485,044, Cl. 260-399.000.

Fertl, Walter H.; and Ruhovets, Naum, to Dresser Industries, Inc. Method and apparatus for determining characteristics of clay-bearing formations. 4,484,470, Cl. 73-152.000.

Fichtel and Sachs AG: *See*—
Axthammer, Ludwig; and Wossner, Felix, 4,484,670, Cl. 18-322.191.

Fiessinger, Francois; Thebault, Paul; and Codiasse, Daniel, to Societe Lyonnaise des Eaux et de l'Eclairage. Process of clarifying water. 4,485,018, Cl. 210-716.000.

Figg and Muller Engineers, Inc.: *See*—
Muller, Jean N., 4,484,425, Cl. 52-223.00R.

Filter, Willi: *See*—
Wahle, Gunter; and Filter, Willi, 4,484,591, Cl. 131-280.000.

Fimtessile Fabbrica Italiana Macchinario Tessile SpA: *See*—
Epis, Olivo, 4,484,605, Cl. 139-330.000.

Finn, Arnold H., to Taco Products, Inc. Air turbine handpiece for dental scaling and other applications. 4,484,893, Cl. 433-118.000.

Finn, Robert G.; and DeBoer, Charles D., to Eastman Kodak Company. Photographic elements and processes for providing a monochromatic dye image. 4,485,165, Cl. 430-223.000.

Firestone Tire & Rubber Company, The: *See*—
Koch, Russell W., 4,485,135, Cl. 428-36.000.
Koch, Russell W.; and Hausch, Walter R., 4,485,136, Cl. 428-36.000.
Wallet, Bill J.; and Casimiro, A. Robert, 4,484,610, Cl. 152-209.00R.

Firey, Joseph C. Cyclic velox boiler. 4,484,531, Cl. 110-342.000.

First Edgemont Corp.: *See*—
McHugh, Thomas K., 4,484,620, Cl. 165-11.00R.

Fischer, Gerhard: *See*—
Scheuter, Karl; and Fischer, Gerhard, 4,485,397, Cl. 358-283.000.

Fischer, Paul M.: *See*—
Brenholt, David L.; Fischer, Paul M.; and Mattson, Kenneth V., 4,484,860, Cl. 416-182.000.

Fisher, Charles B.; and Fisher, Sidney T. Reduction of iron ores by hydrocarbons. 4,484,944, Cl. 75-1.00R.

Fisher, Ian P.; and Samman, Nicolas G., to Gulf Canada Limited. Catalytic hydrocracking in the presence of hydrogen donor. 4,485,004, Cl. 208-112.000.

Fisher, Mahlon B.: *See*—
Donofrio, Robert L.; Rollason, Peter H.; and Fisher, Mahlon B., 4,485,329, Cl. 313-478.000.

Fisher, Sidney T.: *See*—
Fisher, Charles B.; and Fisher, Sidney T., 4,484,944, Cl. 75-1.00R.

Fitton, Harry, to Quinoderm Limited. Dermatological compositions. 4,485,091, Cl. 424-62.000.

Flanagan, James L., to AT&T Bell Laboratories. Directable microphone system. 4,485,484, Cl. 381-92.000.

Flexwatt Corporation: *See*—
Grise, Frederick G. J.; and Stumphauzer, William C., 4,485,297, Cl. 219-528.000.

Floyd, Middleton B., Jr.; and DeVries, Vern G., to American Cyanamid Company. Arylglyoxals useful as hypoglycemic agents. 4,485,114, Cl. 424-315.000.

FMC Corporation: *See*—
Braksmayer, Diza P., 4,485,262, Cl. 568-15.000.
McIntyre, William A., 4,485,084, Cl. 423-588.000.

FMN Schuster GmbH & Co., K.G.: *See*—
Tschentscher, Alfred, 4,484,713, Cl. 242-43.00R.

Fogarty, A. Edward; and Fogarty, Bonnie R., to Mattel, Inc. Talking figure play set. 4,484,408, Cl. 446-299.000.

Fogarty, Bonnie R.: *See*—
Fogarty, A. Edward; and Fogarty, Bonnie R., 4,484,408, Cl. 446-299.000.

Ford Motor Company: *See*—
Choma, Michael A.; Husak, Philip W.; and Simko, Aladar O., 4,484,551, Cl. 123-336.000.
Kordomenos, Panagiotis I.; and Kurple, Kenneth R., 4,485,199, Cl. 523-400.000.
Kovacs, Bela V.; Nowicki, Roman M.; and Stickels, Charles A., 4,484,953, Cl. 148-3.000.

Formall Syn-Trac Systems, Inc.: *See*—
Forshee, David J.; and Salloum, James S., 4,484,525, Cl. 104-95.000.

Forshee, David J.; and Salloum, James S., to Formall Syn-Trac Systems, Inc. Plastic monorail conveyor trolley. 4,484,525, Cl. 104-95.000.

Foster, Frederick S.: *See*—
Loos, Jerold C.; Wakefield, James R.; and Foster, Frederick S., 4,484,733, Cl. 270-54.000.

Fournier, Paul J. E.; and Alexander, Richard M., to Aeroquip Corporation. Fluid sampling valve. 4,484,482, Cl. 73-863.850.

Fourre, Patrick: *See*—
Bauer, Denise; Fourre, Patrick; and Sabot, Jean-Louis, 4,485,076, Cl. 423-112.000.

Fowler, Arthur J., to Radyne Limited. Manufacturing plastic bags. 4,484,904, Cl. 493-213.000.

Fowler, Steven E.: *See*—
Smith, Rex L.; Ankeney, D. Philip; Yates, Patrick A.; Blazek, Henry F.; and Fowler, Steven E., 4,484,523, Cl. 102-202.500.

Fox, Adrian S., to Howmedica, Inc. Biocompatible poly-(ether-urethane-urea) and process for its preparation. 4,485,227, Cl. 528-61.000.

Fox, Joseph D.; Kuhlmann, George E.; and Hundley, John G., to Standard Oil Company, The. Thermal process for the liquefaction of aromatic hydrocarbon oxidation residues and recovery of acetic acid. 4,485,244, Cl. 549-245.000.

Frank, Edward H.: *See*—
Sproull, Robert; and Frank, Edward H., 4,485,472, Cl. 371-15.000.

Franz, Peter; and Seipp, Hans, to Buss AG. Process for preparing dust-free particles. 4,485,060, Cl. 264-102.000.

Franz, Rudolph J., to Eaton Corporation. Vehicle temperature control system. 4,484,619, Cl. 165-2.000.

Frauenrath, Herbert: *See*—
Scharf, Hans-Dieter; Frauenrath, Herbert; Heine, Hans-Georg; Rudolph, Hans; Neuhaus, Karl-Friedrich; and Bendszus, Otto, 4,485,249, Cl. 549-347.000.

Freeman, Daniel E.: *See*—
Szabo, Paul; Freeman, Daniel E.; Martin, Trevor I.; and Lennon, John M., 4,485,260, Cl. 564-402.000.

Freerks, Conrad T., to Minnesota Mining and Manufacturing Company. Block for wet abrading. 4,484,419, Cl. 51-391.000.

Freling, Melvin: *See*—
Rashid, James M.; Friedrich, Leonard A.; and Freling, Melvin, 4,485,148, Cl. 428-610.000.

Frentzel, Richard L.; and Moss, Ernest K., to Celotex Corporation, The. Extraction of polyoxyalkylene surfactants for phenolic foam stabilization. 4,485,194, Cl. 521-129.000.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See*—
Coenen, Hubert; Hagen, Rainer; and Kriegel, Ernst, 4,485,003, Cl. 208-10.000.

Friedlund, Donald R.: *See*—
Frystak, Richard; and Friedlund, Donald R., 4,484,521, Cl. 101-111.000.

Friedrich, Leonard A.: *See*—
Rashid, James M.; Friedrich, Leonard A.; and Freling, Melvin, 4,485,148, Cl. 428-610.000.

Fritjof, Maag. Method and device for the production of textile fibre yarns. 4,484,435, Cl. 57-315.000.

Fritz, Frederick F.; and Daigle, Ralph L., to Alco Foodservice Equipment Company. Air ventilation and pollution cleaning system. 4,484,563, Cl. 126-299.00D.

Frohn, Paul R. Cassette tape rack. 4,484,701, Cl. 224-273.000.

Fruchey, Olan S., to Celanese Corporation. Production of cupric and manganous alkanoates. 4,485,046, Cl. 260-413.000.

Fruchey, Olan S.; and de la Garza, Edward M., to Celanese Corporation. Copper and manganese oxidation catalysts recovery from aqueous solutions. 4,485,047, Cl. 260-413.000.

Fry, Harry B., Jr., to Shasta Beverages, Inc. Method and apparatus for dispensing liquid. 4,484,697, Cl. 222-95.000.

Frystak, Richard; and Friedlund, Donald R., to Bell & Howell Company. Date band indexing mechanism for endorser. 4,484,521, Cl. 101-111.000.

Fuchs, Francis J., Jr. Axially segmented pressure vessel. 4,484,689, Cl. 220-3.000.

Fuchs, Karl-Dieter; and Krohn, Ulrich, to Feldmuhle Aktiengesellschaft. Papermaking dewatering apparatus having wire support means with cooling water feed means. 4,484,981, Cl. 162-252.000.
Fuchs, Rainer; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. 2-Phenyl-alk-1-enyl-cyclopropane-carboxylic acid intermediates. 4,485,252, Cl. 560-8.000.
Fuerniss, Stephen J.: *See*—
Briney, Gary C.; and Fuerniss, Stephen J., 4,485,167, Cl. 430-281.000.
Fuji Jukogyo Kabushiki Kaisha: *See*—
Takano, Toshio; and Sakakiyama, Ryuzo, 4,484,672, Cl. 192-3.560.
Fuji Koki Manufacturing Co., Ltd.: *See*—
Yoshiga, Kenji, 4,484,725, Cl. 251-11.000.
Fuji Photo Film Co., Ltd.: *See*—
Ishiguro, Shoji; Kojima, Tetsuro; and Mitsui, Akio, 4,485,169, Cl. 430-615.000.
Takahashi, Yasuo; Fujioka, Takashi; and Nakayama, Yasuhiro, 4,485,170, Cl. 430-627.000.
Takano, Masao, 4,485,481, Cl. 378-19.000.
Tanaka, Kazuyoshi; Kato, Hisatoyo; and Matsumoto, Seiji, 4,485,302, Cl. 250-327.200.
Teraoka, Masanori; Komaki, Takao; and Matsumoto, Seiji, 4,485,304, Cl. 250-327.200.
Watanabe, Shojiro; Namiki, Tomizo; and Shinozaki, Fumiaki, 4,485,139, Cl. 428-219.000.
Fuji Photo Optical Co., Ltd.: *See*—
Doi, Yoshikazu; Sakai, Yutaka; and Ohno, Kazunori, 4,484,799, Cl. 350-426.000.
Fuji Xerox Co., Ltd.: *See*—
Takayanagi, Hiroshi, 4,484,812, Cl. 355-14.0CH.
Fujikawa, Hisao: *See*—
Shida, Yoshiaki; Fujikawa, Hisao; Koike, Masao; Murayama, Junichiro; and Akiyama, Shunichiro, 4,484,956, Cl. 148-12.0EA.
Fujimaki, Tatsuo; Yamada, Tomoharu; Katayama, Keiko; and Tomita, Seisuke. Rubber compositions suitable for tires comprising amorphous styrene-butadiene copolymer. 4,485,205, Cl. 524-526.000.
Fujimori, Naoji: *See*—
Shingu, Hideo; Ishihara, Keiichi; Doi, Akira; and Fujimori, Naoji, 4,485,080, Cl. 423-446.000.
Fujimoto, Katsuhiko: *See*—
Nishimaki, Toshihiko; Nakaminato, Yoshikazu; and Fujimoto, Katsuhiko, 4,485,476, Cl. 373-2.000.
Fujimura, Isao; Nakajima, Sadaaki; Abe, Morio; and Taniguchi, Masahiko, to Chisso Corporation. Polyolefin foamed fibers and process producing the same. 4,485,141, Cl. 428-288.000.
Fujinawa, Masaaki; and Saito, Susumu, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. Graphic reading. 4,485,410, Cl. 358-294.000.
Fujioka, Takashi: *See*—
Takahashi, Yasuo; Fujioka, Takashi; and Nakayama, Yasuhiro, 4,485,170, Cl. 430-627.000.
Fujisaki, Shigemi; and Mitani, Mitsuaki, to Kaken Pharmaceutical Co., Ltd. Pronase used for the treatment of diseases of the liver and kidneys in humans and animals. 4,485,095, Cl. 424-94.000.
Fujita, Takayuki; Yoshida, Yoshiaki; Higashiura, Toshiyuki; and Tanaka, Kunio, to Matsushita Electric Industrial Co., Ltd. Apparatus for supplying columnar or cylindrical articles. 4,484,693, Cl. 221-119.000.
Fujita, Toshiji: *See*—
Furuta, Haruo; Fujita, Toshiji; Yamada, Chihiko; and Nojima, Masaki, 4,485,413, Cl. 358-334.000.
Fujitsu Fanuc Limited: *See*—
Hattori, Masayuki; and Nakamura, Shigeo, 4,485,423, Cl. 361-92.000.
Inaba, Hajimu; Sakakibara, Shinsuke; and Nihei, Ryo, 4,484,855, Cl. 414-736.000.
Fujitsu Limited: *See*—
Honda, Isao; and Shimizu, Takafumi, 4,485,270, Cl. 179-2.00E.
Sukeda, Toshiaki; Maekawa, Harumi; and Takai, Sakan, 4,485,458, Cl. 365-1.000.
Fukami, Akira: *See*—
Okamoto, Kunio; and Fukami, Akira, 4,484,938, Cl. 55-269.000.
Fukami, Harukazu: *See*—
Kikumoto, Ryoji; Fukami, Harukazu; Hara, Hiroto; Ninomiya, Kunihiro; and Sugano, Mamoru, 4,485,258, Cl. 562-471.000.
Fukao, Masami: *See*—
Suzukamo, Gohfu; and Fukao, Masami, 4,485,257, Cl. 562-401.000.
Fukatsu, Michio: *See*—
Ashina, Yoshiro; and Fukatsu, Michio, 4,485,261, Cl. 564-479.000.
Fukuda, Tamotsu: *See*—
Asari, Akira; Fukuda, Tamotsu; and Matsuura, Shiro, 4,484,881, Cl. 425-405.00H.
Fukui, Yoshiharu: *See*—
Shiga, Akinobu; Fukui, Yoshiharu; Sasaki, Toshio; Okawa, Masahisa; and Matsuura, Hideaki, 4,485,035, Cl. 502-115.000.
Fukutomi, Yohji: *See*—
Kobayashi, Hideo; Fukutomi, Yohji; Asakura, Masahiko; and Kishida, Eiji, 4,484,441, Cl. 60-285.000.
Funk, Gary L.; and Bland, Terry E., to Phillips Petroleum Company. Control apparatus for an ammonia manufacturing process. 4,485,070, Cl. 422-62.000.
Furumura, Kyozaburo; and Matsunaga, Shigeki, to Nippon Seiko Kabushiki Kaisha. Process for producing a ferrofluid, and a composition thereof. 4,485,024, Cl. 252-62.560.
Furuno Electric Co., Ltd.: *See*—
Iino, Hiroshi; and Hayashi, Tatsuo, 4,485,479, Cl. 377-43.000.
Furuta, Haruo; Fujita, Toshiji; Yamada, Chihiko; and Nojima, Masaki, to Toppan Printing Company, Ltd. Process and apparatus for converting a video frame into a set of color separation films. 4,485,413, Cl. 358-334.000.
Furuzono, Yoshihisa; Kajiwara, Toshiyuki; Kadota, Toshiyuki; Nakano, Kazuyuki; and Tabusi, Kenzi, to Hitachi, Ltd.; and Nisshin Steel Co., Ltd. Method of continuous coating of metallic strip material. 4,485,132, Cl. 427-428.000.
Fusion Systems Corporation: *See*—
Ury, Michael G.; and Wood, Charles H., 4,485,332, Cl. 315-112.000.
Gadefelt, Bengt G.; and Saaf, Lars L., to Saab-Scania Aktiebolag. Internal combustion engine with at least one combustion chamber having four valves. 4,484,550, Cl. 123-308.000.
Gaietto, Joseph R.; and Smith, William J., to General Electric Company. Method of treating winding means of dynamoelectric machine core. 4,485,126, Cl. 427-116.000.
Gallagher, Hugh M., Jr., to Consolidated Metal Products, Inc. Sucker rod. 4,484,833, Cl. 403-267.000.
Gannett, Thomas P.; Gibbs, Hugh H.; and Kassal, Robert J., to Du Pont de Nemours, E. I., and Company. Melt-fusible polyimides. 4,485,140, Cl. 428-260.000.
Gans, Karl: *See*—
Bung, Richard; Gans, Karl; Schreyer, Gerold; and Weizel, Gerhard, 4,485,055, Cl. 264-8.000.
Gantwerker, Scott; and Leong, Sai, to Quaker Oats Company, The. Process for preparing an instant baby cereal porridge product. 4,485,120, Cl. 426-625.000.
Garmon, Jeff P.: *See*—
Williams, Joseph C.; Garmon, Jeff P.; Biswas, Dipak R.; and Nath, Dilip K., 4,485,122, Cl. 427-45.100.
Garrett Corporation, The: *See*—
Satchwell, David L., 4,484,622, Cl. 165-153.000.
Gau, Gerald S.; and Vaynshteyn, Vladimir, to Halliburton Company. Automatic viscometer. 4,484,468, Cl. 73-60.000.
Gau, Shek-Chung: *See*—
Dalal, Vikram L.; Akhtar, M.; and Gau, Shek-Chung, 4,485,128, Cl. 427-85.000.
Gebruder Pletscher: *See*—
Weissenberger, Heinz, 4,484,832, Cl. 403-191.000.
Geiler, Volkmar: *See*—
Gliemeroth, Georg; Eichhorn, Uwe; Holzel, Eva; Ross, Ludwig; Krolla, Hans-Georg; Speit, Burkhard; Geiler, Volkmar; and Hoffmann, Hans-Jurgen, 4,485,178, Cl. 501-13.000.
Gemmani, Giuseppe, to SCM Finanziaria S.p.A. Splinter prevention device in automatic cycle woodworking machines. 4,484,607, Cl. 144-82.000.
General Binding Corporation: *See*—
Wang, James C., 4,484,971, Cl. 156-244.140.
General Dynamics/Electronics: *See*—
Osterwalder, Johann M., 4,485,474, Cl. 372-28.000.
General Electric Company: *See*—
Bell, Gordon M.; and Ridlen, James R., 4,485,218, Cl. 525-257.000.
Gaietto, Joseph R.; and Smith, William J., 4,485,126, Cl. 427-116.000.
Ghaem-Maghami, Sanjar; and Holshouser, Howard E., 4,485,394, Cl. 358-10.000.
Hill, William D.; Hollenbeck, Dennis W.; and Schor, Kenneth M., 4,485,342, Cl. 323-351.000.
Houston, John M., 4,484,818, Cl. 356-432.000.
Hurtle, Ralph L., 4,485,283, Cl. 200-144.00R.
Milkovic, Miran, 4,485,343, Cl. 324-142.000.
Pauze, Denis R., 4,485,127, Cl. 427-120.000.
Rabatin, Jacob G., 4,485,308, Cl. 250-461.100.
Velazquez, Herb F., 4,484,571, Cl. 128-134.000.
General Signal Corporation: *See*—
Sibley, Henry C., 4,485,435, Cl. 364-200.000.
GEO Vann, Inc.: *See*—
Vann, Roy R., 4,484,632, Cl. 166-297.000.
Gewerkschaft Eisenhutte Westfalia: *See*—
Berwald, Werner, 4,484,677, Cl. 198-735.000.
Ghaem-Maghami, Sanjar; and Holshouser, Howard E., to General Electric Company. Automatic convergence and gray scale correction for television receivers and projection television systems. 4,485,394, Cl. 358-10.000.
Ghelardoni, Mario: *See*—
Pestellini, Vittorio; Ghelardoni, Mario; Maggi, Carlo Alberto; Roncucci, Gabrio; and Meli, Alberto, 4,485,112, Cl. 424-285.000.
Gibbons, Gould, Jr.: *See*—
Walker, Evan H.; Gibbons, Gould, Jr.; and Bowers, Gilbert A., 4,484,678, Cl. 206-3.000.
Gibbs, David A.; Hofeldt, Robert H.; and Billings, Charles A., to W. R. Grace & Co. Plastisol sealing gaskets puffed with hollow discrete spheres. 4,485,192, Cl. 521-54.000.
Gibbs, Hugh H.: *See*—
Gannett, Thomas P.; Gibbs, Hugh H.; and Kassal, Robert J., 4,485,140, Cl. 428-260.000.
Gierhart, Dennis L., to CPC International Inc. Multistage process for the preparation of fats and oils. 4,485,172, Cl. 435-134.000.
Gierhart, Dennis L., to CPC International Inc. Preparation of fats and oils. 4,485,173, Cl. 435-134.000.
Gillbrand, Per S., to Saab-Scania Aktiebolag. Arrangement for controlling exhaust gas recirculation in a supercharged internal combustion engine. 4,484,445, Cl. 60-605.000.
Gilroy, Keith; and Johnson, Mark, to Smiths Industries Public Limited Company. Filter assembly for connecting intermediate an epidural cannula and a syringe. 4,485,014, Cl. 210-433.200.
Givaudan Corporation: *See*—
Kaiser, Roman, 4,485,036, Cl. 252-522.00R.

Gizzio, John. Photo splitting device. 4,484,805, Cl. 354-122.000.

GK Technologies, Incorporated: *See*—
Norling, Thomas B.; Polkowski, Joseph H.; Poulsen, Jeffrey A.; and Robinson, Daniel E., 4,485,271, Cl. 179-19.000.

Glaenzer Spicer: *See*—
Orain, Michel A., 4,484,900, Cl. 464-111.000.

Glaxo Group Limited: *See*—
Clitherow, John W.; Price, Barry J.; Hayes, Roger; and Bays, David E., 4,485,104, Cl. 424-246.000.

Gleason, Robert F.: *See*—
Anctil, Stephen N.; Gleason, Robert F.; Hadfield, Don A.; Logan, John S. B., Jr.; and Richardson, Alfred G., 4,484,963, Cl. 156-56.000.

Gliemeroth, Georg; Eichhorn, Uwe; Holzel, Eva; Ross, Ludwig; Krolla, Hans-Georg; Speit, Burkhard; Geiler, Volkmar; and Hoffmann, Hans-Jurgen, to Schott-Glaswerke. Phototropic glass with a brown tint in the irradiated state. 4,485,178, Cl. 501-13.000.

Glissmann, Karl-Heinz: *See*—
Stucke, Walter; and Glissmann, Karl-Heinz, 4,484,877, Cl. 425-113.000.

Glock, Alfred; Schon, Rudolf; Schonung, Bernhard; and Seebo, Kurt, to SKF Kugellagerfabriken GmbH. Blocking device for rovings on spinning machine draw frames. 4,484,376, Cl. 19-0.250.

GMP Institute, Inc.: *See*—
Becze, Thomas D., 4,484,748, Cl. 273-256.000.

Gmunder, Bruno, to Imag-Verlags Ag Fur Immaterialguterrecht. Toy for arranging slidable elements in various patterns. 4,484,744, Cl. 273-153.00S.

Gobel, Wilhelm: *See*—
Musch, Rudiger; Gobel, Wilhelm; Konter, Wolfgang; and Muller, Eberhard, 4,485,216, Cl. 525-215.000.

Gocho, Nagahiro: *See*—
Nobuto, Toru; Hayashi, Asao; Kambara, Koji; Tojiki, Hitomi; and Gocho, Nagahiro, 4,484,817, Cl. 356-416.000.

Goerne, Jan; and Traulsen, Wilfried, to Siemens Aktiengesellschaft. Drive circuit for at least one light-emitting diode. 4,485,311, Cl. 307-270.000.

Goetze AG: *See*—
Deuring, Hans, 4,484,751, Cl. 277-12.000.

Goetzman, Robert G. Dual stage combustion furnace. 4,484,530, Cl. 110-296.000.

Goi, Kowichi, to Laurel Bank Machine Co., Ltd. Note separating and delivering apparatus for use in note handling machine. 4,484,735, Cl. 271-12.000.

Gokimoto, Hiroyuki; and Kiyomitsu, Isao, to Mazda Motor Corporation. Automobile seat. 4,484,776, Cl. 296-65.00R.

Goldberg, Seymour, to EG&G, Inc. Vapor discharge lamp assembly. 4,485,333, Cl. 315-149.000.

Goldsberry, Fred L., to W. K. Technology, Inc. Variable pressure power cycle and control system. 4,484,446, Cl. 60-647.000.

Goldstein, Joseph. Stretch-wrap film dispenser with single digit tension control. 4,484,717, Cl. 242-96.000.

Goltz, Kurt: *See*—
Adams, Richard G.; Goltz, Kurt; and Spaeth, Frederick J., 4,485,131, Cl. 427-388.200.

Gontowski, Walter S., Jr.; and Chalfin, Edward, to Sprague Electric Company. Linear two-terminal integrated circuit photo sensor. 4,485,301, Cl. 250-214.00A.

Gonzalez, Emmanuel. Solar collector panel and heat storage system. 4,484,566, Cl. 126-429.000.

Good, Alfred N., to Du Pont de Nemours, E. I., and Company. Process for drawing polyamide yarn. 4,485,063, Cl. 264-235.600.

Goodwin, Boyd G.; and Goodwin, Carol A. Spiked shoe protector. 4,484,398, Cl. 36-135.000.

Goodwin, Carol A.: *See*—
Goodwin, Boyd G.; and Goodwin, Carol A., 4,484,398, Cl. 36-135.000.

Goodyear Tire & Rubber Company, The: *See*—
Smith, Robert A., 4,485,224, Cl. 526-214.000.

Gordon, Roy G.; and Kurtz, Sarah, to President and Fellows of Harvard College. Photovoltaic cell. 4,485,265, Cl. 136-255.000.

Goriletsky, Valentin I.: *See*—
Apilat, Vitaly Y.; Goriletsky, Valentin I.; Maximov, Vladimir G.; Mjulendorf, Oleg S.; Radkevich, Alexei V.; Chernitsky, Leonid D.; Eidelman, Lev G.; Vakulenko, Viktor Y., deceased; and Vakulenko, Raisa P., administrator, 4,485,072, Cl. 422-249.000.

Gotoh, Yoshio: *See*—
Mizuhashi, Mamoru; and Gotoh, Yoshio, 4,485,146, Cl. 428-428.000.

Gottfried Amann & Sohn Gesellschaft mbH & Co.: *See*—
Amann, Emmo, 4,484,517, Cl. 99-474.000.

Gottlieb, David; and Zer, Eliezer. Apparatus for lifting a wheelchair onto the roof of an automobile. 4,484,851, Cl. 414-462.000.

Gough, David A., to University of California, The Regents of the. Method and membrane applicable to implantable sensor. 4,484,987, Cl. 204-1.00T.

Gould, Inc.: *See*—
Hunsinger, Billy J.; Merritt, Sears W.; and Swanson, David A., 4,485,363, Cl. 333-193.000.

Gould, Larry D. Constant and variable force tensioning devices utilizing atmospheric pressure. 4,484,732, Cl. 267-64.140.

Graham, John R. Esophageal stethoscope. 4,484,583, Cl. 128-671.000.

Graham, Phyllis: *See*—
Calder, Oliver J., 4,484,707, Cl. 239-119.000.

Grammer, Willibald: *See*—
Meiller, Hermann; and Grassl, Johann, 4,484,723, Cl. 248-550.000.

Grassauer, Willie K.; and Robinson, William M., to Raychem Corporation. Solder delivery system. 4,484,704, Cl. 228-180.00A.

Grasselli, Robert K.: *See*—
Brazdil, James F., Jr.; Attig, Thomas G.; and Grasselli, Robert K., 4,485,079, Cl. 423-376.000.

Grassl, Johann: *See*—
Meiller, Hermann; and Grassl, Johann, 4,484,723, Cl. 248-550.000.

Grawitz, Auguste: *See*—
Roux, Joel; and Grawitz, Auguste, 4,484,925, Cl. 8-94.260.

Great Lakes Carbon Corporation: *See*—
Secrist, Duane R.; and Clark, James M., 4,484,997, Cl. 204-243.00R.

Green, Tom M. Weight training device. 4,484,740, Cl. 272-119.000.

Griffiths, Derek A., to Benjamin Baker (Lye) Limited. Horseshoe manufacture. 4,484,438, Cl. 59-61.000.

Grigsby, Robert A., Jr.: *See*—
Speranza, George P.; Grigsby, Robert A., Jr.; and Brennan, Michael E., 4,485,196, Cl. 521-172.000.

Grise, Frederick G. J.; and Stumphauzer, William C., to Flexwatt Corporation. Electrical resistance heater. 4,485,297, Cl. 219-528.000.

Griswold, Augustus W., to Crosfield Data Systems, Inc. Apparatus for applying a cap to and removing the cap from a pin. 4,484,828, Cl. 402-60.000.

Groos, Horst; and Wintzen, Gunther, to SMS Schloemann-Siemag Aktiengesellschaft. Device for removing a die, a discard and a closing plate from an indirect metal extrusion press. 4,484,466, Cl. 72-255.000.

Grossiord, Claude R.; and Molliex, Jean P., to S. T. Dupont. Adjustable expander-evaporator and variable maximum flow limiter for a liquified gas lighter. 4,484,888, Cl. 431-344.000.

Grote, Warren H., to American Trading and Production Corporation. Speaker support assembly. 4,484,658, Cl. 181-150.000.

Grover, Donald D.; and Mueller, Ralph H., to Snap-on Tools Corporation. Luminosity probe with positively retained light pipe. 4,484,469, Cl. 73-119.00A.

Growers Ice Company: *See*—
Crabb, Richard V., Jr., 4,484,448, Cl. 62-64.000.

Grumman Aerospace Corporation: *See*—
Pirich, Ronald G.; and Larson, David J., Jr., 4,484,995, Cl. 204-192.00M.

Grund, Christian: *See*—
Lemelson, Jerome H.; and Grund, Christian, 4,485,400, Cl. 358-85.000.

Grundfos A/S: *See*—
Jensen, Borge R., 4,484,862, Cl. 417-36.000.

Grundig E. M.V.: *See*—
Bohm, Friedrich; and Sebald, Richard, 4,485,407, Cl. 358-229.000.

Gruner, Manfred; and Gugel, Bernd, to Mannesmann AG. Drive circuit for printer, particularly, matrix printer of the needle or hammer variety. 4,485,425, Cl. 361-153.000.

Grunwald, Werner; and Schmid, Kurt, to Robert Bosch GmbH. Method of through-contacting a circuit board. 4,485,129, Cl. 427-97.000.

GTE Products Corporation: *See*—
Haraden, Thomas; and Hough, Harold L., 4,485,331, Cl. 315-57.000.

Guatta, Carlo: *See*—
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Gue, Frank S. Waterplanes employing a hydrofoil structure as landing gear. 4,484,721, Cl. 244-105.000.

Gueraud, Roger, to Electricite de France (Service National) French National Service. Turbine generator unit installation. 4,484,447, Cl. 60-687.000.

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Gruner, Manfred; and Gugel, Bernd, 4,485,425, Cl. 361-153.000.

Guichard, Georges: *See*—
L'Homme, Louis; Ponthriand, Pierre; and Guichard, Georges, 4,484,788, Cl. 312-320.000.

Guillemain, Pierre: *See*—
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Fisher, Ian P.; and Samman, Nicolas G., 4,485,004, Cl. 208-112.000.

Gunter, Harvey R.; Stutzman, Gary L.; and Salerno, Stephen G., to Mobil Oil Corporation. Method for reducing shrinkage of injection molded linear low density polyethylene. 4,485,217, Cl. 525-240.000.

Guthrie, Kenneth R., to Cues, Inc. Packer for sealing lateral lines. 4,484,602, Cl. 138-93.000.

Haarmann, Walter, to Schmidt Couplings, Incorporated. Coupling for accommodating misalignment between shafts. 4,484,899, Cl. 464-69.000.

Hadfield, Don A.: *See*—
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Hadley, Mac E.: *See*—
Hruby, Victor J.; Hadley, Mac E.; and Sawyer, Tomi K., 4,485,039, Cl. 260-112.50R.

Hagen, Rainer: *See*—
Coenen, Hubert; Hagen, Rainer; and Kriegel, Ernst, 4,485,003, Cl. 208-10.000.

Hait, James M. Torque driven irrigation system. 4,484,708, Cl. 239-177.00R.

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Tang, Chung L.; Olsson, Nils A.; and Halbout, Jean-Marc, 4,485,473, Cl. 372-18.000.

Hale, David J., to Brunswick Corporation. Exhaust system for four cylinder two-cycle engines. 4,484,442, Cl. 60-313.000.
Hall Systems, Inc.: *See*—
Loos, Jerold C.; Wakefield, James R.; and Foster, Frederick S., 4,484,733, Cl. 270-54.000.
Halliburton Company: *See*—
Brandell, John T., 4,484,633, Cl. 166-301.000.
Gau, Gerald S.; and Vaynshteyn, Vladimir, 4,484,468, Cl. 73-60.000.
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Yamamoto, Katsumi; Komatsu, Yuichiro; and Hamada, Ikurou, 4,484,413, Cl. 51-165.710.
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Inoue, Susumu; Sakashita, Isao; Meguro, Kazunori; and Hamaguchi, Kunio, 4,485,143, Cl. 428-334.000.
Hamasaki, Masanobu; and Tateiwa, Fumikazu, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Method of making a hole in a thick-walled metal material. 4,485,287, Cl. 219-69.00M.
Hamazaki, Takakazu: *See*—
Kawasaki, Isamu; and Hamazaki, Takakazu, 4,484,703, Cl. 228-144.000.
Hamed, Parviz, to SW Industries, Inc. Monomer-plasticized elastomers and process for producing same. 4,485,198, Cl. 523-335.000.
Hammann, Ingeborg: *See*—
Fuchs, Rainer; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,485,252, Cl. 560-8.000.
Hancock, Robert D. Method and apparatus for determining boiling points of liquids. 4,484,822, Cl. 374-27.000.
Hanover, Barry K.; and Jacobsen, Stephen C., to Organon Teknika Corporation. Pinch-type pressure- or flow-regulating valve. 4,484,599, Cl. 137-636.100.
Hanson, Russell B.: *See*—
Hanson, Wallace A., Jr.; and Hanson, Russell B., 4,484,831, Cl. 403-7.000.
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Hara, Hiroto: *See*—
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Harada, Takashi: *See*—
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Haraden, Thomas; and Hough, Harold L., to GTE Products Corporation. Fluorescent lamp holder. 4,485,331, Cl. 315-57.000.
Harkonen, Eino. Procedure and means for measuring the flow velocity of a suspension flow, utilizing ultrasonics. 4,484,478, Cl. 73-861.060.
Harley Murray, Inc.: *See*—
Murray, Harley W.; Burnell, Howard P.; and Murray, David H., 4,484,758, Cl. 280-442.000.
Harman, John N., III; and Neti, Radhakrishna M., to Beckman Instruments, Inc. Sterilizable pH electrode and method for producing the same. 4,485,001, Cl. 204-408.000.
Harper, Stanley A., to RCA Corporation. Method for preparing a mosaic luminescent screen using a mosaic precoating. 4,485,158, Cl. 430-28.000.
Harper & Tunstall Limited: *See*—
Ashburner, Adi K., 4,484,905, Cl. 493-415.000.
Harrington, Edward R.; Uffner, William E.; and Janicki, Richard T., to Owens-Corning Fiberglas Corporation. Chemically modified high oil asphalt. 4,485,142, Cl. 428-290.000.
Harrington, Edward R.; Uffner, William E.; and Janicki, Richard T., to Owens-Corning Fiberglas Corporation. Chemically modified high oil asphalt. 4,485,145, Cl. 428-378.000.
Harris Data Communications Inc.: *See*—
Eames, Frederick M., Jr., 4,485,335, Cl. 315-382.000.
Harris, Kenneth M.; Williams, Derek; and Tomsett, Derek W., to Lucas Industries Public Limited Company. Fluid control valves. 4,484,727, Cl. 251-77.000.
Harris, Neville W., to High Voltage Engineering Corp. High voltage pulse generator. 4,485,428, Cl. 361-235.000.
Hart, John W.: *See*—
Kaufman, Stephen B.; Hart, John W.; and Chamernik, Richard, 4,484,920, Cl. 604-416.000.
Hartt, Alan J.: *See*—
Ledford, Billy R.; and Hartt, Alan J., 4,484,559, Cl. 125-1.000.
Harvatin, Louis J.: *See*—
Anderson, Arthur I.; and Harvatin, Louis J., 4,484,528, Cl. 105-248.000.
Harwood, Leopold A.: *See*—
Fang, Ta-Fang; Wittmann, Erwin J.; Harwood, Leopold A.; and Craft, Jack, 4,485,353, Cl. 331-8.000.
Shanley, Robert L., II; and Harwood, Leopold A., 4,485,354, Cl. 331-8.000.
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Irie, Nobuhiko; and Hasegawa, Akira, 4,484,875, Cl. 425-47.000.
Hashimoto, Shunichi: *See*—
Kirino, Osamu; Hashimoto, Shunichi; Matsumoto, Hiroshi; and Oshio, Hiromichi, 4,484,942, Cl. 71-118.000.
Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Matsumoto, Hiroshi; and Kamoshita, Katsuzo, 4,484,940, Cl. 71-96.000.
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Hashizume, Kenichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Cooling apparatus for a gas insulated transformer. 4,485,367, Cl. 336-57.000.
Hashizume, Yoshiki: *See*—
Uchimura, Eikichi; and Hashizume, Yoshiki, 4,484,951, Cl. 106-290.000.
Hatakeyama, Yoshiharu; and Kozuka, Shinichi, to Yoshida Industry Co., Ltd. Method for forming bottle closure. 4,485,065, Cl. 264-255.000.
Hattori, Masayuki; and Nakamura, Shigeo, to Fujitsu Fanuc Limited. Power source for control equipment. 4,485,423, Cl. 361-92.000.
Hattori, Shigeru; and Tagami, Tomoyuki, to Honda Giken Kogyo Kabushiki Kaisha. Air intake system for motorized cycles. 4,484,651, Cl. 180-225.000.
Hauni-Werke Korber & Co. KG.: *See*—
Wahle, Gunter; and Filter, Willi, 4,484,591, Cl. 131-280.000.
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Steiniger, Wolfgang; Bardenhagen, Dietrich; and Quarella, Guido, 4,484,589, Cl. 131-110.000.
Hausch, Walter R.: *See*—
Koch, Russell W.; and Hausch, Walter R., 4,485,136, Cl. 428-36.000.
Hayakawa, Yoichi, to Aisin Warner Kabushiki Kaisha. Torque transfer mechanism for a four-wheel drive vehicle. 4,484,654, Cl. 180-247.000.
Hayashi, Asao: *See*—
Nobuto, Toru; Hayashi, Asao; Kambara, Koji; Tojiki, Hitomi; and Gocho, Nagahiro, 4,484,817, Cl. 356-416.000.
Hayashi, Tatsuo: *See*—
Iino, Hiroshi; and Hayashi, Tatsuo, 4,485,479, Cl. 377-43.000.
Hayes, Roger: *See*—
Clitherow, John W.; Price, Barry J.; Hayes, Roger; and Bays, David E., 4,485,104, Cl. 424-246.000.
Hayward, Gamon B., to Maas-Rowe Carillons, Inc. Handbell clapper. 4,484,535, Cl. 116-171.000.
Health Research (Roswell Park Division): *See*—
Chadha, Kailash C.; and Sulkowski, Eugene, 4,485,038, Cl. 260-112.00K.
Heck, Steven R., to Luverne Truck Equipment, Inc. Tire carrier for pickups and vans. 4,484,699, Cl. 224-42.210.
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Hefner, Robert E., Jr.; and Hefner, Robert E., Sr., 4,485,220, Cl. 525-411.000.
Heilmann, Steven M.: *See*—
Rasmussen, Jerald K.; Heilmann, Steven M.; and Palensky, Frederick J., 4,485,236, Cl. 544-69.000.
Heine, Hans-Georg: *See*—
Scharf, Hans-Dieter; Frauenrath, Herbert; Heine, Hans-Georg; Rudolph, Hans; Neuhaus, Karl-Friedrich; and Bendszus, Otto, 4,485,249, Cl. 549-347.000.
Heintges, Siegfried: *See*—
Strauss, Werner; and Heintges, Siegfried, 4,485,010, Cl. 209-500.000.
Heinz, Robert; and Sommer, Karl, to BASF Aktiengesellschaft. Roller press for the production of granules or moldings. 4,484,879, Cl. 425-145.000.
Heiser, Warren R.: *See*—
McCrone, James G.; and Heiser, Warren R., 4,484,742, Cl. 273-73.00A.
Heliwig, Paul; and Schlagheck, Werner, to U.S. Philips Corporation. Electric lamp with a sleeve-shaped cap. 4,485,326, Cl. 313-318.000.
Hendriks, Ivo G. M.: *See*—
Liekens, J. Alfons F.; and Hendriks, Ivo G. M., 4,484,679, Cl. 206-303.000.
Henkel Kommanditgesellschaft auf Aktien: *See*—
Rossmann, Christian; and Burger, Helga, 4,485,027, Cl. 252-90.000.
Hennessy, Thomas F., to Lori Corporation. Door lock guard. 4,484,463, Cl. 70-452.000.
Hennion, Claude: *See*—
Lewiner, Jacques; Hennion, Claude; and Berthier, Gilbert, 4,485,381, Cl. 340-825.310.
Henocque, Jean; and Besnard, Henri, to Etablissements Trouvay and Cauvin S.A. Apparatus for indicating fluid flow. 4,484,536, Cl. 116-275.000.
Henriksen, William G.: *See*—
Driller, Jack; Henriksen, William G.; Coleman, D. Jackson; and Lizzi, Frederic L., 4,484,569, Cl. 128-660.000.
Hercules Incorporated: *See*—
English, Larry W., 4,484,882, Cl. 425-529.000.
Klosiewicz, Daniel W., 4,485,208, Cl. 524-773.000.
Leipold, Dianne P., 4,485,089, Cl. 424-49.000.
Hermann Berstorff Maschinenbau GmbH: *See*—
Anders, Dietmar; Voigt, Jurgen; and Kruse, Heinrich, 4,484,878, Cl. 425-135.000.
Herschberger, Melvin. Apparatus for stuffing ground meat into casings. 4,484,374, Cl. 17-37.000.
Hershberger, Vilas D. Grip-responsive dozing driver alarm. 4,485,375, Cl. 340-576.000.
Herve, Guy J.: *See*—
de Sivry, Bruno J. M.; Migliarese-Caputi, Jean-Louis; Herve, Guy J.; Baylot, Michel P.; Colas, Claude J.; and Baudet, Pierre, 4,485,344, Cl. 324-207.000.
Herwig, Walter; Decker, Rudolf; Sikora, Helga; and Erbes, Kurt, to Hoechst Aktiengesellschaft. Radiation-polymerizable mixture and photopolymerizable copying material prepared therefrom. 4,485,166, Cl. 430-260.000.

Hettinger, William P., Jr.; Beck, H. Wayne; Carruthers, James D.; Cornelius, Edward B.; Kovach, Stephen M.; and Palmer, James L., to Ashland Oil, Inc. Trapping of metals deposited on catalytic materials during carbometallic oil conversion. 4,485,184, Cl. 502-67.000.

Heubusch, Henry P., to Textron, Inc. Preparation and purification of N_2O_4 containing rocket propellant oxidizer. 4,484,961, Cl. 149-74.000.

Hibino, Masahiro, to Nissan Motor Company, Limited. Fuel cut-off system for an engine coupled to an automatic power transmission with a lockup device. 4,484,497, Cl. 74-859.000.

Hida, Junichi, to Hoshizaki Electric Co., Ltd. Cutter for an auger type icemaker. 4,484,455, Cl. 62-320.000.

Higashiura, Toshiyuki: *See*—
Fujita, Takayuki; Yoshida, Yoshiaki; Higashiura, Toshiyuki; and Tanaka, Kunio, 4,484,693, Cl. 221-119.000.

High Voltage Engineering Corp.: *See*—
Harris, Neville W., 4,485,428, Cl. 361-235.000.

Higuchi, Akira; Ishigaki, Naoyuki; Matsuura, Yutaka; and Yamamoto, Hitoshi, to Sumitomo Special Metals Co., Ltd. Permanent magnetic alloy. 4,484,957, Cl. 148-31.570.

Higuchi, Seiji; and Chiba, Moichi, to Nippon Seiko Kabushiki Kaisha. Sealed non-separable combined bearing. 4,484,824, Cl. 384-126.000.

Hikade, Robert C.; and Swift, Glen, to Vilter Manufacturing Corporation. Means for securing valve disc to valve spindle. 4,484,596, Cl. 137-315.000.

Hill, William D.; Hollenbeck, Dennis W.; and Schor, Kenneth M., to General Electric Company. Load driving circuitry with load current sensing. 4,485,342, Cl. 323-351.000.

Hilti Aktiengesellschaft: *See*—
Ott, Johann, 4,484,848, Cl. 411-24.000.

Hinkebein, John A., to Monsanto Company. Composites of sulfur and crystalline phosphate fibers. 4,484,950, Cl. 106-287.290.

Hiraishi, Hisashi: *See*—
Shintani, Atsunobu; Yamakami, Yoshiaki; and Hiraishi, Hisashi, 4,484,958, Cl. 148-38.000.

Hiraki, Shunichi: *See*—
Kumamaru, Kuniaki; Hiraki, Shunichi; and Yonezawa, Toshio, 4,485,393, Cl. 357-52.000.

Hiramoto, Seigo: *See*—
Tabata, Youichiro; Ueguri, Shigeo; Mizuno, Takaji; Segawa, Hirohisa; and Hiramoto, Seigo, 4,485,293, Cl. 219-130.310.

Hirano, Hirofumi: *See*—
Kimura, Takeshi; Watanabe, Satoshi; Hirano, Hirofumi; and Sasaki, Setsuo, 4,484,520, Cl. 101-99.000.

Hirano, Hiroyuki: *See*—
Yamamuro, Sigeaki; Hirano, Hiroyuki; Tanaka, Yoshikazu; and Morimoto, Yoshiro, 4,484,493, Cl. 74-689.000.

Hirasawa, Shigeichi; and Horiguchi, Akira, to Mitsubishi Denki Kabushiki Kaisha. Digital FSK demodulator. 4,485,347, Cl. 329-50.000.

Hirayama, Ryuta: *See*—
Asano, Hiroshi; Shimamune, Takayuki; Nitta, Hideo; and Hirayama, Ryuta, 4,484,999, Cl. 204-290.00R.

Hirsh Company: *See*—
Ferdinand, Irwin J.; Sylvan, Richard; and Peterson, Michael, 4,484,608, Cl. 144-134.00B.

Hirtz, Pierre: *See*—
Poulain, Pierre; de Cremoux, Baudouin; and Hirtz, Pierre, 4,485,391, Cl. 357-19.000.

Hirzel, Paul M. Fluid motor having lockable helically displaceable output shaft. 4,484,510, Cl. 92-24.000.

Hitachi Chemical Company, Ltd.: *See*—
Makino, Daisuke; and Miyadera, Yasuo, 4,485,234, Cl. 528-329.000.

Hitachi Construction Machinery Co., Ltd.: *See*—
Ogura, Yukio; and Miyajima, Takeshi, 4,484,475, Cl. 73-579.000.

Hitachi Koki Co., Ltd.: *See*—
Fujinawa, Masaaki; and Saito, Susumu, 4,485,410, Cl. 358-294.000.

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Fujinawa, Masaaki; and Saito, Susumu, 4,485,410, Cl. 358-294.000.
Furuzono, Yoshihisa; Kajiwara, Toshiyuki; Kadota, Toshiyuki; Nakano, Kazuyuki; and Tabusi, Kenzi, 4,485,132, Cl. 427-428.000.
Horikoshi, Shigeru; and Sakaguchi, Tatsunori, 4,484,653, Cl. 180-233.000.
Ishiguro, Hideo, 4,485,431, Cl. 363-20.000.
Kurosawa, Soichi; Wada, Katsuo; and Teranishi, Mitsuo, 4,484,858, Cl. 416-95.000.
Misono, Masayoshi, 4,485,327, Cl. 313-414.000.
Sato, Hidemi; Kaneda, Aizo; Yokono, Hitoshi; Ohashi, Atsuyoshi; Miyake, Kiyohide; Kodama, Toshiro; and Suzuki, Kiichi, 4,484,796, Cl. 350-96.210.
Sato, Tetsuo, 4,485,350, Cl. 330-86.000.
Tsuzurahara, Masnoru; and Inamura, Ichiro, 4,485,330, Cl. 315-39.510.

Hitachi Medical Corporation: *See*—
Kohno, Hideki; Shiono, Hidemi; Sekihara, Kensuke; Yanaka, Shigenobu; and Suzuki, Takaji, 4,485,480, Cl. 378-4.000.

Hochstein, Peter A. Shape memory material and method of treating same. 4,484,955, Cl. 148-11.50R.

Hochstrasser, Karl; and Wachter, Elmar, to Bayer Aktiengesellschaft. Elastase inhibitors, a process for their preparation and medicaments containing these inhibitors. 4,485,100, Cl. 424-177.000.

Hodgson, Emory R., Jr., to Dynamics Corporation of America. Levee plow with extensible linkage. 4,484,636, Cl. 172-454.000.

Hoechst Aktiengesellschaft: *See*—
Herwig, Walter; Decker, Rudolf; Sikora, Helga; and Erbes, Kurt, 4,485,166, Cl. 430-260.000.
Hoyer, Ernst; Meininger, Fritz; and Fass, Rudolf, 4,485,041, Cl. 534-637.000.
Kleiner, Hans-Jerg; and Neumaier, Hubert, 4,485,052, Cl. 260-502.40R.

Hofeldt, Robert H.: *See*—
Gibbs, David A.; Hofeldt, Robert H.; and Billings, Charles A., 4,485,192, Cl. 521-54.000.

Hoffmann, Hans-Jurgen: *See*—
Gliemeroth, Georg; Eichhorn, Uwe; Holzel, Eva; Ross, Ludwig; Krolla, Hans-Georg; Speit, Burkhard; Geiler, Volkmar; and Hoffmann, Hans-Jurgen, 4,485,178, Cl. 501-13.000.

Holbeche, Robert J.: *See*—
Allen, Graham; and Holbeche, Robert J., 4,485,487, Cl. 455-265.000.

Holl, Walter; and Mandel, Adolf, to Robert Bosch GmbH. Storage element for electrical energy. 4,485,155, Cl. 429-194.000.

Holland Colours Apeldoorn B.V.: *See*—
Bes, Richard F. T.; Knol, Jan D.; and Roest, Gooitsen, 4,484,952, Cl. 106-308.00Q.

Hollenbeck, Dennis W.: *See*—
Hill, William D.; Hollenbeck, Dennis W.; and Schor, Kenneth M., 4,485,342, Cl. 323-351.000.

Holloway, Peter R., to Analog Devices, Incorporated. Two-stage a-to-d converter. 4,485,372, Cl. 340-347.0AD.

Holmes, Paul M., to Aeroquip Corporation. Cargo control track and fitting. 4,484,847, Cl. 410-104.000.

Holoubek, George H.: *See*—
Burzlaff, Henry A.; and Holoubek, George H., 4,484,970, Cl. 156-233.000.

Holshouser, Howard E.: *See*—
Ghaem-Maghami, Sanjar; and Holshouser, Howard E., 4,485,394, Cl. 358-10.000.

Holzel, Eva: *See*—
Gliemeroth, Georg; Eichhorn, Uwe; Holzel, Eva; Ross, Ludwig; Krolla, Hans-Georg; Speit, Burkhard; Geiler, Volkmar; and Hoffmann, Hans-Jurgen, 4,485,178, Cl. 501-13.000.

Homan, Clarke G.; Scholz, Wilfried W.; Standish, William J.; and Leiberich, Andreas, to Research Foundation, State University of New York. Superconducting type II palladium alloy hydride-palladium hydride composites. 4,485,152, Cl. 428-670.000.

Homeyer, Bernhard: *See*—
Fuchs, Rainer; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,485,252, Cl. 560-8.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Hattori, Shigeru; and Tagami, Tomoyuki, 4,484,651, Cl. 180-225.000.
Kobayashi, Hideo; Fukutomi, Yohji; Asakura, Masahiko; and Kishida, Eiji, 4,484,441, Cl. 60-285.000.
Nakajima, Tetsuo; and Irino, Hiroshi, 4,484,554, Cl. 123-339.000.
Nihei, Tetsuo; Maki, Toshio; and Sakuma, Kazuyoshi, 4,484,464, Cl. 72-38.000.
Shiratsuchi, Kouji; and Ishikawa, Yoshimi, 4,484,652, Cl. 180-227.000.

Honda, Isao; and Shimizu, Takafumi, to Fujitsu Limited. Method for transmitting a charging signal. 4,485,270, Cl. 179-2.00E.

Honda, Yukio; Komatsu, Hitoshi; and Mihara, Yoshiyuki, to Idemitsu Petrochemical Co., Ltd. Multi-layer extrusion die. 4,484,883, Cl. 425-462.000.

Honeywell Elac-Nautik GmbH: *See*—
Wiegner, Egon, 4,485,462, Cl. 367-12.000.
Wiegner, Egon, 4,485,462, Cl. 367-12.000.

Hopkins, David: *See*—
DeMarco, Richard E.; Hopkins, David; and Deegan, Dennis I., 4,484,715, Cl. 242-68.600.

Hopkins, Thomas R., to Phillips Petroleum Company. Enzymatic removal of aromatic hydroxy compounds and aromatic amines from waste waters. 4,485,016, Cl. 210-632.000.

Horiguchi, Akira: *See*—
Hirasawa, Shigeichi; and Horiguchi, Akira, 4,485,347, Cl. 329-50.000.

Horikoshi, Shigeru; and Sakaguchi, Tatsunori, to Hitachi, Ltd. Automatic driving wheel change-over apparatus. 4,484,653, Cl. 180-233.000.

Horn, Gary R.; and Shipp, Kenneth O., Jr., to International Business Machines Corporation. Automatic intertext column spacing. 4,484,826, Cl. 400-279.000.

Hoshino, Takahiro, to Toyo Bussan Kabushiki Kaisha. Colored floppy diskette. 4,485,421, Cl. 360-133.000.

Hoshizaki Electric Co., Ltd.: *See*—
Hida, Junichi, 4,484,455, Cl. 62-320.000.

Hosie, William C., to William C. Hosie, Inc. Sprinkler deflector. 4,484,709, Cl. 239-231.000.

Hosiery Manufacturing Corp. of Morganton: *See*—
Parks, Gary P.; and Wade, Jack H., 4,484,461, Cl. 68-142.000.

Hosoi, Yukiharu: *See*—
Isaka, Yoshiharu; and Hosoi, Yukiharu, 4,484,650, Cl. 180-219.000.

Hosokawa, Atsushi: *See*—
Ninagawa, Chikayoshi; Ashizaki, Shigeya; Kimura, Masamichi; and Hosokawa, Atsushi, 4,485,328, Cl. 313-466.000.

Hospitak, Inc.: *See*—
Lacey, William J., 4,484,769, Cl. 285-12.000.

Houdart, Michel, to Thomson-CSF. Microwave subharmonic mixer device. 4,485,488, Cl. 455-327.000.

Hough, Harold L.: *See*—
Haraden, Thomas; and Hough, Harold L., 4,485,331, Cl. 315-57.000.

Houser, Marion E., Jr., to Trane Company, The. Heat pump refrigerant charge control system. 4,484,452, Cl. 62-174.000.
Houston, John M., to General Electric Company. Apparatus and method for detecting the loss of vacuum. 4,484,818, Cl. 356-432.000.
Houston, Rehrig. Wheeled cart for use by handicapped, invalid and frail persons. 4,484,755, Cl. 280-33.99A.
Howden, Harry, to U.S. Philips Corporation. Method of manufacturing a multiple mirror reflector for a land based telescope. 4,484,798, Cl. 350-601.000.
Howmedica, Inc : *See*—
Fox, Adrian S., 4,485,227, Cl. 528-61.000.
Hoyer, Ernst; Meininger, Fritz; and Fass, Rudolf, to Hoechst Aktiengesellschaft. Water-soluble metal free or copper triazino-bis-[hydroxy-naphthylamino]-disazo dyestuffs containing fiber reactive groups, and a process for dyeing or printing cellulose fibers. 4,485,041, Cl. 534-637.000.
Hruby, Victor J.; Hadley, Mac E.; and Sawyer, Tomi K., to University Patents, Inc. Synthetic analogues of α-melanotropin. 4,485,039, Cl. 260-112.50R.
Hsia, Chih-Hung: *See*—
Hsia, Chih-Yu; and Hsia, Chih-Hung, 4,484,394, Cl. 33-484.000.
Hsia, Chih-Yu; and Hsia, Chih-Hung. Curve length measure means. 4,484,394, Cl. 33-484.000.
Hsu, Chao-Yang; and Lyons, James E., to Sun Tech, Inc. Hydrogenation of carboxylic acid anhydrides to lactones or esters using a ruthenium trichlorostannate catalyst. 4,485,245, Cl. 549-302.000.
Hudson, Alan T.; and Randall, Anthony W. Antiprotozoal compounds. 4,485,116, Cl. 424-331.000.
Hudson, Alan T.; and Randall, Anthony W. Antiprotozoal compounds. 4,485,117, Cl. 424-331.000.
Hughes Aircraft Company: *See*—
Landis, Abraham L., 4,485,231, Cl. 528-125.000.
Hughey, Daniel C.: *See*—
Woodruff, Frederick W.; and Hughey, Daniel C., 4,485,427, Cl. 361-235.000.
Huhman, Michael L.; and Stuber, Michael R., to Allis-Chalmers Corp. Combined concave and rock door structure. 4,484,588, Cl. 130-27.0JT.
Hundley, John G.: *See*—
Fox, Joseph D.; Kuhlmann, George E.; and Hundley, John G., 4,485,244, Cl. 549-245.000.
Hung, William M.: *See*—
Schmidt, Paul J.; and Hung, William M., 4,485,242, Cl. 548-506.000.
Hunsinger, Billy J.; Merritt, Sears W.; and Swanson, David A., to Gould, Inc. Signal processor using surface acoustic waves. 4,485,363, Cl. 333-193.000.
Hunter Douglas Inc.: *See*—
Anderson, Richard N., 4,484,611, Cl. 160-107.000.
Hunter Douglas International N.V.: *See*—
Vecchiarelli, Francis, 4,484,612, Cl. 160-177.000.
Hunter, Robert L.: *See*—
Balaska, Richard K.; Hunter, Robert L.; and Robinson, Scott S., Jr., 4,485,457, Cl. 364-900.000.
Huret, Alain P. B., legal representative: *See*—
Huret, Roger, deceased; and Huret, Alain P. B., legal representative, 4,484,902, Cl. 474-195.000.
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Huret, Roger, deceased; and Huret, Alain P. B., legal representative, 4,484,902, Cl. 474-195.000.
Huret, Roger, deceased; and Huret, Alain P. B., legal representative, to Huret et ses Fils. Drive pulley in particular for the distance recorder of a bicycle. 4,484,902, Cl. 474-195.000.
Hurtle, Ralph L., to General Electric Company. Current limiter unit. 4,485,283, Cl. 200-144.00R.
Husak, Philip W.: *See*—
Choma, Michael A.; Husak, Philip W.; and Simko, Aladar O., 4,484,551, Cl. 123-336.000.
Hutchinson, John, to Imperial Chemical Industries PLC. Production of vermiculite products and suspension for use therein. 4,485,203, Cl. 524-414.000.
Hutson, Harold K., to Knytex Proform. Biased multi-layer structural fabric composites stitched in a vertical direction and process and apparatus for making same. 4,484,459, Cl. 66-84.00A.
Huzinec, Robert J.: *See*—
Carroll, Thomas J.; Feinerman, Deborah; Huzinec, Robert J.; and Piccolo, Dominic J., 4,485,118, Cl. 426-5.000.
Hydraulic Services Inc.: *See*—
Pagel, Wayne H., 4,484,863, Cl. 417-204.000.
I. E. I (Australia) Proprietary Limited: *See*—
Cole, Martin T., 4,485,373, Cl. 340-522.000.
Ibiden Kabushiki Kaisha: *See*—
Enomoto, Ryo; and Tsukada, Kiyotaka, 4,485,182, Cl. 501-151.000.
Ichikawa, Tetsuo: *See*—
Akiyama, Osamu; Ichikawa, Tetsuo; and Tsunazawa, Yoshio, 4,484,815, Cl. 356-325.000.
Idemitsu Petrochemical Co., Ltd.: *See*—
Honda, Yukio; Komatsu, Hitoshi; and Mihara, Yoshiyuki, 4,484,883, Cl. 425-462.000.
Igarashi, Takeshi: *See*—
Ikeda, Tatsuhiko; Igarashi, Takeshi; and Shimizu, Atsushi, 4,485,171, Cl. 435-30.000.
Iino, Hiroshi; and Hayashi, Tatsuo, to Furuno Electric Co., Ltd. Phase control device. 4,485,479, Cl. 377-43.000.
Iio, Masahiro: *See*—
Shibuya, Tsunenori; and Iio, Masahiro, 4,484,868, Cl. 418-15.000.
Iizuka, Haruhiko: *See*—
Sugasawa, Fukashi; and Iizuka, Haruhiko, 4,484,548, Cl. 123-198.00F.
Ikeda, Tatsuhiko; Igarashi, Takeshi; and Shimizu, Atsushi, to Terumo Corporation. Multi-layer microorganism culture testing apparatus. 4,485,171, Cl. 435-30.000.
Illetschko, Gerhard, to Robert Bosch GmbH. Noise reduction system for television signals. 4,485,403, Cl. 358-167.000.
Illgner, Klaus: *See*—
Claus, Gunter; Illgner, Klaus; and Jacques, Helmut, 4,485,377, Cl. 340-719.000.
Illy, Ernesto. Automatic espresso coffee machine. 4,484,515, Cl. 99-282.000.
Imag-Verlags Ag Fur Immaterialguterrecht: *See*—
Gmunder, Bruno, 4,484,744, Cl. 273-153.00S.
Imamoto, Tsunehiko; and Yanase, Akio, to Dai Nippon Insatsu Kabushiki Kaisha. Work slip reading and summing device. 4,485,299, Cl. 235-377.000.
Imamura, Kenji; Saitoh, Hiroshi; Kakizaki, Katsuhisa; and Makino, Motohiko, to TDK Electronics Co., Ltd. Magnetic carrier powder having a wide chargeable range of electric resistance useful for magnetic brush development. 4,485,162, Cl. 430-106.600.
Imperial Chemical Industries PLC: *See*—
Hutchinson, John, 4,485,203, Cl. 524-414.000.
Nevin, Morris N., 4,484,998, Cl. 204-257.000.
In Situ Technology, Inc.: *See*—
Terry, Ruel C., 4,484,629, Cl. 166-259.000.
Inaba, Hajimu; Sakakibara, Shinsuke; and Nihei, Ryo, to Fujitsu Fanuc Limited. Double-hand unit. 4,484,855, Cl. 414-736.000.
Inaba, Naomi: *See*—
Nomura, Takeshi; Maruyama, Kouji; Ueno, Hiroshi; Inaba, Naomi; and Yoda, Makota, 4,485,187, Cl. 502-134.000.
Ueno, Hiroshi; Kohara, Tadanao; Nomura, Takeshi; Maruyama, Kouji; Inaba, Naomi; and Yoda, Makota, 4,485,186, Cl. 502-128.000.
Inagaki, Mitsukane: *See*—
Nakayama, Shozo; Inagaki, Mitsukane; Suzuki, Shigeru; and Ban, Takashi, 4,484,869, Cl. 418-55.000.
Inagaki, Mitsuo; and Sasaya, Hideaki, to Nippon Soken, Inc. Through vane type rotary compressor with specific chamber configuration. 4,484,873, Cl. 418-150.000.
Inamura, Ichiro: *See*—
Tsuzurahara, Mamoru; and Inamura, Ichiro, 4,485,330, Cl. 315-39.510.
Industrial Vehicles International, Inc.: *See*—
Bird, James M., 4,484,656, Cl. 181-114.000.
Ing. C. Olivetti & C., S.p.A.: *See*—
Dagna, Giandomenico; Manini, Enrico; and Tadini, Giorgio, 4,485,386, Cl. 346-75.000.
Ing. Rudolf Hell GmbH: *See*—
Scheuter, Karl; and Fischer, Gerhard, 4,485,397, Cl. 358-283.000.
Ingenior F. Selmer A/S: *See*—
Einstabland, Thomas, 4,484,841, Cl. 405-212.000.
Ingenior Thor Furuholmen A/S: *See*—
Einstabland, Thomas, 4,484,841, Cl. 405-212.000.
Ingersoll-Rand Company: *See*—
Cook, John P.; and Banerjee, Bani R., 4,484,644, Cl. 175-410.000.
Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,485,286, Cl. 219-69.00M.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Multi-vibrator head EDM method and apparatus. 4,485,286, Cl. 219-69.00M.
Inoue, Shinichi, to Yamato Scale Company, Limited. Combination weighing machine with article feed controlled by average weight of articles in non-selected weighing machines. 4,484,645, Cl. 177-25.000.
Inoue, Susumu; Sakashita, Isao; Meguro, Kazunori; and Hamaguchi, Kunio, to Toshiba Ceramics, Co., Ltd. Silicon carbide material for low-melting point fusion metal. 4,485,143, Cl. 428-334.000.
Inoue, Yoshio; and Okami, Takehide, to Shin-Etsu Chemical Co., Ltd. Oil-resistant, room temperature-curable organopolysiloxane composition. 4,485,206, Cl. 524-719.000.
Institut Francais du Petrole: *See*—
Thillaye du Boullay, Benoit, 4,484,534, Cl. 114-244.000.
Institut National de la Recherche Agronomique: *See*—
Roger, Loic; Mauboia, Jean-Louis; Brule, Gerard; and Piot, Michel, 4,485,040, Cl. 260-122.000.
Institut National de Recherche Chimique Appliquee: *See*—
Lampin, Jean-Pierre; and Leclaire, Yves, 4,485,130, Cl. 427-387.000.
Institut Organicheskogo Sinteza Akademii Nauk Latviiskoi SSR: *See*—
Biseniex, Egils A.; Dubur, Gunar Y.; Uldrikis, Yan R.; Veveris, Maris M.; Kimenis, Agris A.; and Ivanov, Evgeny V., 4,485,239, Cl. 546-321.000.
Institute of Gas Technology: *See*—
Remick, Robert J.; and Ang, Peter G. P., 4,485,154, Cl. 429-14.000.
Instrumentation Laboratory Inc.: *See*—
Chiang, Ching; and Bolton, Susan K., 4,485,174, Cl. 436-11.000.
Instruments S. A.: *See*—
Laude, Jean-Pierre, 4,484,793, Cl. 350-96.200.
Interior Security Corp.: *See*—
English, Thomas A., 4,484,410, Cl. 49-63.000.
International Business Machines Corporation: *See*—
Austruy, Pierre; and Dalboussiere, Gerard, 4,485,436, Cl. 364-200.000.
Balthis, Vernon M.; Evans, Howard E.; and Minor, James C., 4,485,066, Cl. 264-341.000.

Horn, Gary R.; and Shipp, Kenneth O., Jr., 4,484,826, Cl. 400-279.000.
Singh, Shanker; and Singh, Vijendra P., 4,485,471, Cl. 371-2.000.
Taylor, Russell H., 4,485,453, Cl. 364-571.000.
Vinal, Albert W., 4,485,419, Cl. 360-125.000.
International Communication Operations Research: *See*—
Jordon, Frank C.; and Josifek, Knute H., 4,485,274, Cl. 179-90.08D.
International Flavors & Fragrances Inc.: *See*—
Boden, Richard M.; and Licciardello, Michael, 4,485,019, Cl. 252-8.600.
International Minerals & Chemical Corp.: *See*—
Varnum, Nancy C.; and Kraemer, John F., 4,484,616, Cl. 164-520.000.
International Standard Electric Corporation: *See*—
Byron, Kevin C., 4,484,795, Cl. 350-96.190.
International Telephone and Telegraph Corporation: *See*—
Williams, Joseph C.; Garmon, Jeff P.; Biswas, Dipak R.; and Nath, Dilip K., 4,485,122, Cl. 427-45.100.
Inventio AG: *See*—
Lunardi, Gerhard; and Wipp, Gerhard, 4,484,674, Cl. 198-332.000.
Investment Rarities, Incorporated: *See*—
Burandt, Corliss O., 4,484,546, Cl. 123-90.150.
Burandt, Corliss O., 4,484,558, Cl. 123-452.000.
Invicta Plastics Limited: *See*—
Jones-Fenleigh, Edward J., 4,484,718, Cl. 242-96.000.
Iolab Corporation: *See*—
Akhavi, David S.; and Cudworth, Richard W., 4,485,061, Cl. 264-161.000.
Irie, Nobuhiko; and Hasegawa, Akira, to Mitsubishi Jukogyo Kabushiki Kaisha. Tire vulcanizing press. 4,484,875, Cl. 425-47.000.
Irino, Hiroshi: *See*—
Nakajima, Tetsuo; and Irino, Hiroshi, 4,484,554, Cl. 123-339.000.
Ironees Company, The: *See*—
Lehrman, David, 4,484,400, Cl. 38-140.000.
Irving, Graeme N.: *See*—
Clarke, Terence A.; Edwards, Richard B.; and Irving, Graeme N., 4,485,030, Cl. 252-108.000.
Isaka, Yoshiharu; and Hosoi, Yukiharu, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle mounted with V shaped engine. 4,484,650, Cl. 180-219.000.
Iseki, Masahide: *See*—
Tsudaka, Hideaki; Washio, Takaji; Kozuka, Nobuhiko; Iseki, Masahide; Watanabe, Toshio; Kai, Masami; Yoshiyama, Toshio; and Sakata, Hiromi, 4,484,734, Cl. 271-9.000.
Iselfa S.r.l.: *See*—
Polizzotto, Giovanni, 4,485,267, Cl. 174-43.000.
Ishidoshiro, Hiroshi: *See*—
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,484,460, Cl. 68-5.00E.
Ishigaki, Naoyuki: *See*—
Higuchi, Akira; Ishigaki, Naoyuki; Matsuura, Yutaka; and Yamamoto, Hitoshi, 4,484,957, Cl. 148-31.570.
Ishiguro, Hideo, to Hitachi, Ltd. DC-DC Converter. 4,485,431, Cl. 363-20.000.
Ishiguro, Shoji; Kojima, Tetsuro; and Mitsui, Akio, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive materials. 4,485,169, Cl. 430-615.000.
Ishihara, Keiichi: *See*—
Shingu, Hideo; Ishihara, Keiichi; Doi, Akira; and Fujimori, Naoji, 4,485,080, Cl. 423-446.000.
Ishii, Tamaki: *See*—
Terada, Yutaka; Yachigo, Shinichi; and Ishii, Tamaki, 4,485,202, Cl. 524-101.000.
Ishikawa, Ken-ichi. Method and apparatus for cutting hard and brittle material using system for applying vibration in two directions. 4,484,412, Cl. 51-157.000.
Ishikawa, Nobuo; and Kitazume, Tomoya, to Daikin Kogyo Co., Ltd. Process for producing fluorine-containing organic compound. 4,484,993, Cl. 204-158.0HA.
Ishikawa, Norio: *See*—
Yoshiyama, Ichiro; Yuasa, Yoshio; Taniguchi, Nobuyuki; and Ishikawa, Norio, 4,485,336, Cl. 315-241.00P.
Ishikawa, Seiichi: *See*—
Takewa, Hiroyuki; Satoh, Katsuaki; and Ishikawa, Seiichi, 4,484,383, Cl. 29-169.500.
Ishikawa, Shozo: *See*—
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Ishikawa, Tadashi: *See*—
Sekimoto, Kunitoshi; Mamiya, Yoneji; and Ishikawa, Tadashi, 4,485,098, Cl. 424-105.000.
Ishikawa, Yoshimi: *See*—
Shiratsuchi, Kouji; and Ishikawa, Yoshimi, 4,484,652, Cl. 180-227.000.
Isida, Tosio: *See*—
Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; Shimazaki, Hiroshi; and Isida, Tosio, 4,485,056, Cl. 264-41.000.
ISO "Metalurgkomplekt": *See*—
Dimitrov, Issay M.; Boychev, Atanas P.; Ralchev, Vesselin L.; and Kostov, Georgi Y., 4,484,730, Cl. 266-201.000.
Ito, Hiroshi: *See*—
Kobayashi, Nobuyuki; Ito, Hiroshi; and Ohkawa, Nobuhisa, 4,484,552, Cl. 123-339.000.
Kobayashi, Nobuyuki; Ito, Hiroshi; and Kobashi, Mamoru, 4,484,553, Cl. 123-339.000.
Ito, Yuusuke: *See*—
Otsuka, Saburo; Ito, Yuusuke; Yoshikawa, Toshiyuki; and Tokuda, Shoichi, 4,485,087, Cl. 424-28.000.
Itoyama, Masaru; and Kuze, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Thermocouple instrument. 4,485,263, Cl. 136-230.000.
ITT Industries, Inc.: *See*—
Belart, Juan; and Wienecke, Franz, 4,484,509, Cl. 91-369.00A.
Patzold, Dieter; Schreiber, Alfons; and Tiwi, Peter, 4,484,371, Cl. 15-41.00R.
Patzold, Dieter; Schreiber, Alfons; and Tiwi, Peter, 4,484,372, Cl. 15-42.000.
Ivanov, Evgeny V.: *See*—
Biesiex, Egils A.; Dubur, Gunar Y.; Uldrikis, Yan R.; Veveris, Maris M.; Kimenis, Agris A.; and Ivanov, Evgeny V., 4,485,239, Cl. 546-321.000.
Iwami, Naoki: *See*—
Nakahata, Kimio; Tajima, Hatsuo; Iwami, Naoki; Masuda, Shunichi; Shimizu, Katsuichi; Kawatsura, Yoshihiro; Suzuki, Koji; and Yokomizo, Yoshikazu, 4,484,811, Cl. 355-14.0CH.
Iwasa, Takashi: *See*—
Ueda, Yasukiyo; Murakami, Hirokuni; and Iwasa, Takashi, 4,485,296, Cl. 219-505.000.
Iwasaki, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaishi. Method for manufacturing semiconductor Bi-CMOS device. 4,484,388, Cl. 29-571.000.
Izu, Masatsugu; and Ovshinsky, Herbert C., to Energy Conversion Devices, Inc. Method for continuously producing tandem amorphous photovoltaic cells. 4,485,125, Cl. 427-74.000.
Izu, Masatsugu; and Nath, Prem, to Energy Conversion Devices, Inc. Isolation layer for photovoltaic device and method of producing same. 4,485,264, Cl. 136-244.000.
Izu, Masatsugu: *See*—
Ovshinsky, Stanford R.; and Izu, Masatsugu, 4,485,389, Cl. 357-2.000.
J.F.S., Inc.: *See*—
Johnson, David A., 4,484,404, Cl. 42-90.000.
Jackson, Joshua M., to Sperry-Sun, Inc. Tubing protector. 4,484,785, Cl. 308-4.00A.
Jackson, Theodore A.: *See*—
Appelblatt, Irving; Jackson, Theodore A.; and Crabtree, James D., 4,484,765, Cl. 280-725.000.
Jacobs, William, III; Parekh, Girish G.; and Blank, Werner J., to American Cyanamid Company. Hydroxyalkyl carbamate-containing resins for cathodic electrodeposition and method of making the same. 4,484,994, Cl. 204-181.00C.
Jacobsen, Kjell M., to PLM Aktiebolag. Plastic containers for storage of goods under pressure. 4,485,134, Cl. 428-35.000.
Jacobsen, Sally L., executor: *See*—
Thompson, Harry C., deceased, 4,484,368, Cl. 7-106.000.
Jacobsen, Stephen C.: *See*—
Hanover, Barry K.; and Jacobsen, Stephen C., 4,484,599, Cl. 137-636.100.
Jacobsson, Rolf A.: *See*—
Adman, Nils G.; and Jacobsson, Rolf A., 4,484,871, Cl. 418-69.000.
Jacques, Helmut: *See*—
Claus, Gunter; Illgner, Klaus; and Jacques, Helmut, 4,485,377, Cl. 340-719.000.
Jaenson, Howard W., to Jenglo Engineering, Inc. Tying device. 4,484,518, Cl. 100-4.000.
Jagenberg AG: *See*—
Osburg, Dieter; and Voss, Peter, 4,484,736, Cl. 271-220.000.
Jahn, George E.: *See*—
Siegel, Larry E.; Pavkovich, John M.; and Jahn, George E., 4,485,349, Cl. 330-3.000.
Jahnke, William R.: *See*—
Pennella, Andrew J., Jr.; Benjamin, Lawrence S.; Bergman, Adolph G.; and Jahnke, William R., 4,484,845, Cl. 409-134.000.
James, Donald R., to Stauffer Chemical Company. Process for the production of arylsulfonyl isocyanates. 4,485,053, Cl. 260-545.00R.
James, Granville C.; and Burnard, Gerald K., to Coal Industry (Patents) Limited. Dust filter apparatus. 4,484,937, Cl. 55-223.000.
Janicki, Richard T.: *See*—
Harrington, Edward R.; Uffner, William E.; and Janicki, Richard T., 4,485,142, Cl. 428-290.000.
Harrington, Edward R.; Uffner, William E.; and Janicki, Richard T., 4,485,145, Cl. 428-378.000.
Janikowski, Daniel S.; and Bradley, Steven A., to UOP Inc. Conductive pigment-coated surfaces. 4,485,153, Cl. 428-688.000.
Janome Sewing Machine Co., Ltd.: *See*—
Nomoto, Keishi; Takahashi, Masayoshi; and Ebata, Yoshikazu, 4,484,580, Cl. 128-340.000.
Janssen, Petrus H. J.: *See*—
van der Stoel, Roland E.; Janssen, Petrus H. J.; and van de Moesdijk, Cornelis G. M., 4,485,243, Cl. 548-564.000.
Janssen Pharmaceutica N.V.: *See*—
Kennis, Ludo E. J.; Vandenberk, Jan; and Mertens, Josephus C., 4,485,107, Cl. 424-251.000.
Janus, Thomas V.: *See*—
Williams, Richard B.; and Janus, Thomas V., 4,484,421, Cl. 52-7.000.
Japan Storage Battery Company Limited: *See*—
Tokunaga, Akio, 4,485,156, Cl. 429-204.000.
Javna, Stephen L.: *See*—
Berlin, Richard B.; Javna, Stephen L.; and Berlin, Richard B., Jr., 4,484,911, Cl. 604-174.000.

Jenck, Jean, to Rhone-Poulenc Chimie de Base. Carbonylation of α,β-unsaturated esters to linear saturated diesters. 4,485,255, Cl. 560-193.000.

Jenglo Engineering, Inc.: *See*—
Jaenson, Howard W., 4,484,518, Cl. 100-4.000.

Jenkins, Betty S. Nurse call apparatus. 4,484,367, Cl. 5-425.000.

Jensen, Borge R., to Grundfos A/S. Submersible pumps. 4,484,862, Cl. 417-36.000.

Jephcott, Edmund F. Ultra narrow enclosed motor vehicles. 4,484,648, Cl. 180-210.000.

Jeppsson, Jan B.: *See*—
Quist, Bo T.; Jeppsson, Jan B.; and Piltz, Lars E., 4,484,968, Cl. 156-160.000.

Jerabek, Robert D.; Koren, Jeffrey G.; and Johnson, Mark W., to PPG Industries, Inc. Pigment grinding vehicle. 4,485,259, Cl. 564-292.000.

Johansson, Per-Olof; and Lofgren, Folke, to ASEA AB. Apparatus for contact-free sensing of a moving coherent mass of material. 4,485,309, Cl. 250-560.000.

Johnson, David A., to J.F.S., Inc. Spare magazine holder. 4,484,404, Cl. 42-90.000.

Johnson, Hardie B., to Du Pont de Nemours, E. I., and Company. Connector for multiconductor flat insulated cable. 4,484,791, Cl. 339-99.00R.

Johnson & Johnson Baby Products Company: *See*—
Ashton, William H.; Russell, Robert S.; and Zajac, David C., 4,485,092, Cl. 424-69.000.

Johnson, Mark: *See*—
Gilroy, Keith; and Johnson, Mark, 4,485,014, Cl. 210-433.200.

Johnson, Mark W.: *See*—
Jerabek, Robert D.; Koren, Jeffrey G.; and Johnson, Mark W., 4,485,259, Cl. 564-292.000.

Johnston, Byron K.: *See*—
Chang, Wen-Hsuan; Ambrose, Ronald R.; McKeough, David T.; Porter, Samuel, Jr.; and Johnston, Byron K., 4,485,228, Cl. 528-84.000.

Johnston, Richard H.: *See*—
Bongartz, Roy C.; Johnston, Richard H.; Odasso, James J.; and Zaremski, Donald R., 4,484,996, Cl. 204-206.000.

Jones-Fenleigh, Edward J., to Invicta Plastics Limited. Hand held reel. 4,484,718, Cl. 242-96.000.

Jones, Keith N.: *See*—
Cousins, Steven J.; Jones, Keith N.; and Ackerley, Kenneth E., 4,484,778, Cl. 297-284.000.

Jones, Robert K.; and van Velthoven, Armand J., to NCR Corporation. Narrow channel FET. 4,485,390, Cl. 357-23.000.

Jordon, Frank C.; and Josifek, Knute H., to International Communication Operations Research. Sharing an automatic dialer among plural communication channels. 4,485,274, Cl. 179-90.0BD.

Josifek, Knute H.: *See*—
Jordon, Frank C.; and Josifek, Knute H., 4,485,274, Cl. 179-90.0BD.

Jouvin, Jean-Luc. Impression tray for dental prostheses. 4,484,890, Cl. 433-47.000.

Jozic, Ljerka, to Beecham Wuelfing GmbH & Co., KG. 1-Naphthalenesulfonamides, their pharmaceutical compositions and method of use. 4,485,108, Cl. 424-267.000.

Juhl, Randy R.: *See*—
Ahrens, Paul W.; Juhl, Randy R.; Kunce, Larry D.; and Katzer, Wayne E., 4,484,738, Cl. 272-56.50R.

K-V Associates, Inc.: *See*—
Kerfoot, William B.; and Skinner, Stuart M., Jr., 4,484,626, Cl. 166-191.000.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Asari, Akira; Fukuda, Tamotsu; and Matsuura, Shiro, 4,484,881, Cl. 425-405.00H.

Kabushiki Kaisha Komatsu: *See*—
Maruyama, Yasuhiro; Saigo, Takaichi; Tanahashi, Sakae; and Masai, Yoshihei, 4,485,444, Cl. 364-426.000.

Kabushiki Kaisha Toshiba: *See*—
Kawaguchi, Tatsuzo; and Koyama, Mitsutoshi, 4,485,000, Cl. 204-298.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Nakayama, Shozo; Inagaki, Mitsukane; Suzuki, Shigeru; and Ban, Takashi, 4,484,869, Cl. 418-55.000.

Kadota, Toshiyuki: *See*—
Furuzono, Yoshihisa; Kajiwara, Toshiyuki; Kadota, Toshiyuki; Nakano, Kazuyuki; and Tabusi, Kenzi, 4,485,132, Cl. 427-428.000.

Kai, Fumio: *See*—
Katano, Kiyoaki; Atsumi, Kunio; Kai, Fumio; Nishihata, Ken; and Akita, Eiichi, 4,485,235, Cl. 544-021.000.

Kai, Masami: *See*—
Tsudaka, Hideaki; Washio, Takaji; Kozuka, Nobuhiko; Iseki, Masahide; Watanabe, Toshio; Kai, Masami; Yoshiyama, Toshio; and Sakata, Hiromi, 4,484,734, Cl. 271-9.000.

Kaiser, Roman, to Givaudan Corporation. Odorant compositions containing megastigma-5(11),8-dien-4,7-oxides and tetra-substituted-7-oxa-bicyclo[3.3.0]-octanes. 4,485,036, Cl. 252-522.00R.

Kajita, Koji: *See*—
Nakayama, Takashi; Yamagata, Seiichi; and Kajita, Koji, 4,484,436, Cl. 57-328.000.

Kajiwara, Toshiyuki: *See*—
Furuzono, Yoshihisa; Kajiwara, Toshiyuki; Kadota, Toshiyuki; Nakano, Kazuyuki; and Tabusi, Kenzi, 4,485,132, Cl. 427-428.000.

Kaken Pharmaceutical Co., Ltd.: *See*—
Fujisaki, Shigemi; and Mitani, Mitsuaki, 4,485,095, Cl. 424-94.000.

Kakizaki, Katsuhisa: *See*—
Imamura, Kenji; Saitoh, Hiroshi; Kakizaki, Katsuhisa; and Makino, Motohiko, 4,485,162, Cl. 430-106.600.

Kalsi, Manmohan S., to NL Industries, Inc. Rotary shaft seal. 4,484,753, Cl. 277-27.000.

Kalt, Evelyne: *See*—
Avar, Lajos; Kalt, Evelyne; and Reinshagen, Hellmuth, 4,485,034, Cl. 252-403.000.

Kambara, Koji: *See*—
Nobuto, Toru; Hayashi, Asao; Kambara, Koji; Tojiki, Hitomi; and Gocho, Nagahiro, 4,484,817, Cl. 356-416.000.

Kamizyo, Eiji; and Murayama, Noboru, to Ricoh Company, Ltd. Halftone processing method for digital facsmile apparatus. 4,485,408, Cl. 358-283.000.

Kammann, Karl P., Jr.; and Thompson, Paul F., to Ferro Corporation. Sulfurized esters of polycarboxylic acids. 4,485,044, Cl. 260-399.000.

Kamoshita, Katsuzo: *See*—
Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Matsumoto, Hiroshi; and Kamoshita, Katsuzo, 4,484,940, Cl. 71-96.000.
Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Matsumoto, Hiroshi; and Kamoshita, Katsuzo, 4,484,941, Cl. 71-96.000.

Kanatani, Yoshiharu: *See*—
Kinoshita, Hiroshi; Ohba, Toshihiro; Kawaguchi, Masashi; Kanatani, Yoshiharu; and Uede, Hisashi, 4,485,379, Cl. 340-781.000.

Kaneda, Aizo: *See*—
Sato, Hidemi; Kaneda, Aizo; Yokono, Hitoshi; Ohashi, Atsuyoshi; Miyake, Kiyohide; Kodama, Toshiro; and Suzuki, Kiichi, 4,484,796, Cl. 350-96.210.

Kanno, Shigeyuki; and Matsubara, Hajime, to Toshiba Tungaloy Co., Ltd. Quick-change tool. 4,484,498, Cl. 82-36.00B.

Kaplan, Morton R., to Minnesota Mining and Manufacturing. Sealing device for an electrical connector and method therefor. 4,485,268, Cl. 174-84.00C.

Kason Industries, Inc.: *See*—
Berkowitz, Irving L., 4,484,462, Cl. 70-368.000.

Kassal, Robert J.: *See*—
Gannett, Thomas P.; Gibbs, Hugh H.; and Kassal, Robert J., 4,485,140, Cl. 428-260.000.

Katagiri, Hidenori: *See*—
Miura, Hirohisa; Satou, Hiroshi; Natsume, Toshio; and Katagiri, Hidenori, 4,484,943, Cl. 75-0.50B.

Katano, Kiyoaki; Atsumi, Kunio; Kai, Fumio; Nishihata, Ken; and Akita, Eiichi, to Meiji Seika Kaisha Ltd. Process for preparing 7-α-methoxycephem compounds. 4,485,235, Cl. 544-021.000.

Kataoka, Hiroyuki; Yamada, Masanori; and Suzuki, Nobuyuki, to Canon Kabushiki Kaisha. Flash light with pre-emission control. 4,484,807, Cl. 354-415.000.

Katayama, Keiko: *See*—
Fujimaki, Tatsuo; Yamada, Tomoharu; Katayama, Keiko; and Tomita, Seisuke, 4,485,205, Cl. 524-526.000.

Kato, Hisatoyo: *See*—
Tanaka, Kazuyoshi; Kato, Hisatoyo; and Matsumoto, Seiji, 4,485,302, Cl. 250-327.200.

Kato, Keizo; and Yamaue, Yasunobu, to Kubota, Ltd. Forward-reverse changeover apparatus for working vehicle. 4,484,488, Cl. 74-361.000.

Kato, Kenneth H.; and Mencke, Arlene J., to Minnesota Mining and Manufacturing Company. Disinfecting method and compositions. 4,485,029, Cl. 252-106.000.

Kato, Tetsuo, to Tokico Ltd. Hydraulic damper. 4,484,669, Cl. 188-282.000.

Katzer, Wayne E.: *See*—
Ahrens, Paul W.; Juhl, Randy R.; Kunce, Larry D.; and Katzer, Wayne E., 4,484,738, Cl. 272-56.50R.

Kaufman, Stephen B.; Hart, John W.; and Chamernik, Richard, to Baxter Travenol Laboratories, Inc. Container for mixing a liquid and a solid. 4,484,920, Cl. 604-416.000.

Kawada, Shigeki; Oyama, Shigeaki; Nakamura, Kosei; and Nakano, Jiro, to Fanuc Ltd. Welded stator using non-magnetic bars in specially shaped lamination slots. 4,485,320, Cl. 310-217.000.

Kawaguchi, Masashi: *See*—
Kinoshita, Hiroshi; Ohba, Toshihiro; Kawaguchi, Masashi; Kanatani, Yoshiharu; and Uede, Hisashi, 4,485,379, Cl. 340-781.000.

Kawaguchi, Takeo; and Sato, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Superconductive magnet. 4,484,814, Cl. 335-301.000.

Kawaguchi, Tatsuzo; and Koyama, Mitsutoshi, to Kabushiki Kaisha Toshiba. Sputtering target supporting device. 4,485,000, Cl. 204-298.000.

Kawaida, Shinji; and Ozawa, Chiaki, to Bridgestone Tire Company Limited. Ply-turning device for use in tire-building. 4,484,973, Cl. 156-400.000.

Kawamata, Kiyoshi. Method of providing a seal between can end plate and can barrel. 4,484,964, Cl. 156-69.000.

Kawamoto, Hisao, to Bridgestone Tire Company Limited. Process of and apparatus for manufacturing carcass band forming part of radial tire. 4,484,966, Cl. 156-126.000.

Kawasaki, Isamu; and Hamazaki, Takakazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing a box-shaped door. 4,484,703, Cl. 228-144.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Uozumi, Yukio, 4,484,526, Cl. 104-131.000.

Kawashima, Hirofumi, to Seiko Instruments & Electronics Ltd. Method of adjusting resonant frequency of a coupling resonator. 4,484,382, Cl. 29-25.350.

Kawasumi, Koichi: *See*—
Arakawa, Seiichi; Kawasumi, Koichi; and Seto, Junetsu, 4,485,168, Cl. 430-345.000.

Kawatsura, Yoshihiro: *See*—
Nakahata, Kimio; Tajima, Hatsuo; Iwami, Naoki; Masuda, Shunichi; Shimizu, Katsuichi; Kawatsura, Yoshihiro; Suzuki, Koji; and Yokomizo, Yoshikazu, 4,484,811, Cl. 355-14.0CH.

Kayaba Kogyo Kabushiki Kaisha: *See*—
Takigawa, Toshiji; Sakamoto, Akira; and Takahashi, Ryuji, 4,484,443, Cl. 60-534.000.

Kayser, Robert B.: *See*—
Purcell, Robert F.; and Kayser, Robert B., 4,485,021, Cl. 252-8.55D.

Keay, James P. M.: *See*—
Ellis, Stafford M.; and Keay, James P. M., 4,484,381, Cl. 24-523.000.

Kebe, Taib. Calendar. 4,484,402, Cl. 40-107.000.

Keene Corporation: *See*—
DeRusha, Mark A.; Schultz, Thomas E.; and Luchio, Stephen W., 4,484,574, Cl. 128-156.000.

Keith, Laura E., to Polaroid Corporation. Method of and apparatus for controlling scene radiation. 4,484,808, Cl. 354-433.000.

Keller, Douglas V., Jr., to Otisca Industries, Inc. Methods for processing coal. 4,484,928, Cl. 44-1.0SR.

Keller, Thomas B.: *See*—
Torick, Emil L.; and Keller, Thomas B., 4,485,483, Cl. 381-14.000.

Kellermeyer, Christian, to Tara GmbH. Electrically heated for cutting foam plastic material. 4,485,295, Cl. 219-221.000.

Kennedy, John M.; and Kennedy, William R. Mine stopping lap-over panel clamp. 4,484,837, Cl. 405-132.000.

Kennedy, Melvin; Nagel, Dietmar; and Arad, Avi, to Nagel, Kennedy, Arad & Associates. Tricycle. 4,484,649, Cl. 180-216.000.

Kennedy, William R.: *See*—
Kennedy, John M.; and Kennedy, William R., 4,484,837, Cl. 405-132.000.

Kennis, Ludo E. J.; Vandenberk, Jan; and Mertens, Josephus C., to Janssen Pharmaceutica N.V. [[Bis(aryl)methylene]-1-piperidinyl]alkyl-pyrimidinones. 4,485,107, Cl. 424-251.000.

Kerber, Robert, to Briskin Manufacturing Company. Gravity feed and return system for sheet lubricators. 4,484,537, Cl. 118-686.000.

Kerfoot, William B.; and Skinner, Stuart M., Jr., to K-V Associates, Inc. Pneumatic packer. 4,484,626, Cl. 166-191.000.

Kerls, Edward E. Security garment. 4,485,426, Cl. 361-232.000.

Kerr-McGee Chemical Corporation: *See*—
Robertson, Wilbert J.; and Shaw, Roger C., 4,485,073, Cl. 423-49.000.

Key Pharmaceuticals, Inc.: *See*—
Sackner, Marvin A.; and Watson, Herman, 4,484,577, Cl. 128-203.280.

Keyser, Thomas, to Fairchild Camera & Instrument Corp. Etching method. 4,484,978, Cl. 156-643.000.

Khait, Klementina F.: *See*—
Falk, John C.; and Khait, Klementina F., 4,485,219, Cl. 525-394.000.

Kidde, Inc.: *See*—
Mentzer, William R., 4,484,686, Cl. 212-188.000.

Kidena, Masaki; and Nishizuka, Akihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Electronic voltage drop circuit. 4,485,432, Cl. 363-62.000.

Kidoh, Kunizoh: *See*—
Masuhara, Eiichi; Kidoh, Kunizoh; and Bannai, Nobuo, 4,484,894, Cl. 433-168.000.

Kikuchi, Juro, to Olympus Optical Co., Ltd. Optical read-out lens system for optically recorded disks. 4,484,802, Cl. 350-469.000.

Kikumoto, Ryoji; Fukami, Harukazu; Hara, Hiroto; Ninomiya, Kunihiro; and Sugano, Mamoru, to Mitsubishi Chemical Industries Limited. Pharmaceutically active (3-aminopropoxy)bibenzyl derivatives. 4,485,258, Cl. 562-471.000.

Kimberley, John A.; Cavanaugh, John B.; and Kraus, Richard D., to Ambac Industries, Incorporated. Mounting arrangement for fuel rack in fuel injection pump. 4,484,867, Cl. 417-499.000.

Kimenis, Agris A.: *See*—
Biseniez, Egils A.; Dubur, Gunar Y.; Uldrikis, Yan R.; Veveris, Maris M.; Kimenis, Agris A.; and Ivanov, Evgeny V., 4,485,239, Cl. 546-321.000.

Kimoto, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Electronic document information filing system. 4,485,454, Cl. 364-900.000.

Kimura, Akio: *See*—
Suzuki, Togi; Tsunawaki, Kiyokazu; Wada, Osamu; and Kimura, Akio, 4,485,058, Cl. 264-49.000.

Kimura, Kazuaki: *See*—
Ohtomo, Fumio; and Kimura, Kazuaki, 4,484,816, Cl. 356-372.000.

Kimura, Masamichi: *See*—
Ninagawa, Chikayoshi; Ashizaki, Shigeya; Kimura, Masamichi; and Hosokawa, Atsushi, 4,485,328, Cl. 313-466.000.

Kimura, Shigeru; and Arakawa, Masaru, to NIFCO Inc. Binder for binding a bundle of elongated bodies. 4,484,378, Cl. 24-30.5OS.

Kimura, Takeshi; Watanabe, Satoshi; Hirano, Hirofumi; and Sasaki, Setsuo, to Canon Kabushiki Kaisha. Compact printer with clutch. 4,484,520, Cl. 101-99.000.

King, Jeffrey J., to Ceil Clean Corporation, Inc. Inorganic persulfate cleaning solution for acoustic materials. 4,485,028, Cl. 252-99.000.

Kinghorn, John R., to U.S. Philips Corporation. Testing the presence of a peripheral device. 4,485,437, Cl. 364-200.000.

Kinoshita, Hiroshi; Ohba, Toshihiro; Kawaguchi, Masashi; Kanatani, Yoshiharu; and Ueda, Hisashi, to Sharp Kabushiki Kaisha. Circuit and method for driving a thin-film EL panel. 4,485,379, Cl. 340-781.000.

Kinoshita, Makoto: *See*—
Ebata, Yoshihiro; Tamari, Nobuyuki; Kinoshita, Makoto; and Toibana, Yasuo, 4,484,972, Cl. 156-325.000.

Kircaldie, Randall and McNab: *See*—
Durkan, Gerald, 4,484,578, Cl. 128-204.240.

Kirigaya, Seiichi: *See*—
Nishino, Yoshio; and Kirigaya, Seiichi, 4,485,147, Cl. 428-550.000.

Kirino, Osamu; Hashimoto, Shunichi; Matsumoto, Hiroshi; and Oshio, Hiromichi, to Sumitomo Chemical Company, Limited. N-Benzylphenylacetamide derivatives, and their production and use as herbicides. 4,484,942, Cl. 71-118.000.

Kirov, Dimiter L.: *See*—
Dyakov, Dobromir A.; Kodjabashev, Petko V.; Stanchev, Pejo; Kirov, Dimiter L.; Zelezov, Jivko J.; Atanassov, Atanas T.; and Yanev, Krestyu N., 4,485,451, Cl. 364-551.000.

Kirsch, Bernhard. Front bindings for safety ski bindings. 4,484,764, Cl. 280-628.000.

Kirschner, Thomas F., to RCA Corporation. Video disc player having turntable brake mechanism. 4,485,465, Cl. 369-77.200.

Kirschner, Thomas J., Jr.: *See*—
Singer, Victor; Lushis, Donald V.; and Kirschner, Thomas J., Jr., 4,484,439, Cl. 60-230.000.

Kishida, Eiji: *See*—
Kobayashi, Hideo; Fukutomi, Yohji; Asakura, Masahiko; and Kishida, Eiji, 4,484,441, Cl. 60-285.000.

Kita, Kazunori, to Casio Computer Co., Ltd. Time display device with means for selectively reading out a plurality of previous set times. 4,485,463, Cl. 368-82.000.

Kitahara, Makoto: *See*—
Watanabe, Katsunori; Ohta, Shigeto; Sakai, Kiyoshi; Ishikawa, Shozo; and Kitahara, Makoto, 4,485,159, Cl. 430-58.000.

Kitajima, Houdo: *See*—
Yamamoto, Takashi; and Kitajima, Houdo, 4,485,325, Cl. 310-344.000.

Kitamura, Yoshinori: *See*—
Onishi, Masami; Kitamura, Yoshinori; and Nishikawa, Shoji, 4,484,806, Cl. 354-404.000.

Kitani, Motoe: *See*—
Mizuno, Masanori; and Kitani, Motoe, 4,485,292, Cl. 219-123.000.

Kitano, Mikio; Tobita, Hideaki; Uno, Toshio; Yamaguchi, Kyoichi; and Tsuchiya, Ichiyoshi, to Toyota Jidosha Kabushiki Kaisha. Beaded edge forming method and apparatus. 4,484,467, Cl. 72-379.000.

Kitao, Kazuhiko; and Nishimura, Ken-ichi, to Kyoto Yakuhin Kogyo Kabushiki Kaisha. Adjuvant for promoting absorption of pharmacologically active substances through the rectum. 4,485,033, Cl. 252-315.400.

Kitazume, Tomoya: *See*—
Ishikawa, Nobuo; and Kitazume, Tomoya, 4,484,993, Cl. 204-158.0HA.

Kittrell, James R.: *See*—
Tam, Patrick S.; and Kittrell, James R., 4,485,007, Cl. 208-221.000.

Kiyomitsu, Isao: *See*—
Gokimoto, Hiroyuki; and Kiyomitsu, Isao, 4,484,776, Cl. 296-65.00R.

Kleiner, Hans-Jerg; and Neumaier, Hubert, to Hoechst Aktiengesellschaft. Process for the preparation of phosphonous acids. 4,485,052, Cl. 260-502.40R.

Klem, Richard H. Anti-sway suspension. 4,484,767, Cl. 280-772.000.

Klicker, Kenneth A.; Newnham, Robert E.; Cross, Leslie E.; and Bowen, Leslie J., to United States of America, Navy. Broad bandwidth composite transducers. 4,485,321, Cl. 310-322.000.

Klimowicz, Jerome R. Multiple piece bolt-type fastener. 4,484,849, Cl. 411-397.000.

Klimpl, Fred E., to Koch Engineering Co., Inc. Method of winding tile-lined piped with subdivided tiles therein. 4,484,969, Cl. 156-171.000.

Klingerman, Robert H., to W. J. Savage Company. Sawing apparatus. 4,484,417, Cl. 51-267.000.

Klockner-Humboldt-Deutz AG: *See*—
Strauss, Werner; and Heintges, Siegfried, 4,485,010, Cl. 209-500.000.

Klosiewicz, Daniel W., to Hercules Incorporated. Plasticized polydicyclopentadiene and a method for making the same. 4,485,208, Cl. 524-773.000.

Klubitschko, Gerd: *See*—
Knabel, Walter; Klubitschko, Gerd; and Stempfhuber, Lorenz, 4,484,761, Cl. 280-612.000.

Knabel, Walter; Klubitschko, Gerd; and Stempfhuber, Lorenz, to Marker-Patentverwertungsgesellschaft mbH. Magnetic release system for safety ski bindings. 4,484,761, Cl. 280-612.000.

Knauss, Uwe, to Cazzaniga S.p.A. Method and apparatus for the direct measurement of thermal energy transferred by a fluid medium. 4,485,449, Cl. 364-510.000.

Kniel, Paul, to Ciba-Geigy AG. Process for producing 1-amino-4-hydroxy-anthraquinones. 4,485,043, Cl. 260-380.000.

Knodler, Dietrich; Boes, Werner; Ott, Anton; and Venger, Kurt O., to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Torque-control system for automatic speed changer shiftable under load. 4,485,443, Cl. 364-424.100.

Knol, Jan D.: *See*—
Bes, Richard F. T.; Knol, Jan D.; and Roest, Gooitsen, 4,484,952, Cl. 106-308.00Q.

Knop, Karl H.; and Morf, Rudolf H., to RCA Corporation. Diffractive subtractive color filter responsive to angle of incidence of polychromatic illuminating light. 4,484,797, Cl. 350-162.190.

Knowles, Steven M., to Aeroquip Corporation. Hand operated fitting swager. 4,484,384, Cl. 29-237.000.

Knytex Proform: *See*—
Hutson, Harold K., 4,484,459, Cl. 66-84.00A.

Kobashi, Mamoru: *See*—
Kobayashi, Nobuyuki; Ito, Hiroshi; and Kobashi, Mamoru, 4,484,553, Cl. 123-339.000.

Kobayashi, Hideo; Fukutomi, Yohji; Asakura, Masahiko; and Kishida, Eiji, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust gas purification apparatus. 4,484,441, Cl. 60-285.000.

Kobayashi, Nobuyuki; Ito, Hiroshi; and Ohkawa, Nobuhisa, to Toyota Jidosha Kabushiki Kaisha. Engine idling rotational speed control device. 4,484,552, Cl. 123-339.000.

Kobayashi, Nobuyuki; Ito, Hiroshi; and Kobashi, Mamoru, to Toyota Jidosha Kabushiki Kaisha. Engine idling rotational speed control device. 4,484,553, Cl. 123-339.000.

Kobayashi, Satoru, to Nippon Electric Co., Ltd. Memory circuit. 4,485,461, Cl. 365-239.000.

Koch, Eckhard: *See*—
Engel, Hinrich; and Koch, Eckhard, 4,484,846, Cl. 410-69.000.

Koch Engineering Co., Inc.: *See*—
Klimpl, Fred E., 4,484,969, Cl. 156-171.000.

Koch, Russell W., to Firestone Tire & Rubber Company, The. Ambient temperature cure of elastomeric articles having a deformity therein. 4,485,135, Cl. 428-36.000.

Koch, Russell W.; and Hausch, Walter R., to Firestone Tire & Rubber Company, The. Ambient temperature repair of elastomeric articles having a hollow therein. 4,485,136, Cl. 428-36.000.

Kocher, Lawrence: *See*—
Kramer, Charles F.; Willard, Richard A.; and Kocher, Lawrence, 4,484,604, Cl. 139-92.000.

Kodama, Toshiro: *See*—
Sato, Hidemi; Kaneda, Aizo; Yokono, Hitoshi; Ohashi, Atsuyoshi; Miyake, Kiyohide; Kodama, Toshiro; and Suzuki, Kiichi, 4,484,796, Cl. 350-96.210.

Kodera, Masao: *See*—
Yasuda, Eturo; Akita, Shigeyuki; and Kodera, Masao, 4,485,322, Cl. 310-332.000.

Kodjabashev, Petko V.: *See*—
Dyakov, Dobromir A.; Kodjabashev, Petko V.; Stanchev, Pejo; Kirov, Dimiter L.; Zelezov, Jivko J.; Atanassov, Atanas T.; and Yanev, Krestyu N., 4,485,451, Cl. 364-551.000.

Kogej, Boris; and Potocnik, Joze, to Kolektor p. o. Improved method of producing a semifinished commutator. 4,484,389, Cl. 29-597.000.

Kohara, Tadanao: *See*—
Ueno, Hiroshi; Kohara, Tadanao; Nomura, Takeshi; Maruyama, Kouji; Inaba, Naomi; and Yoda, Makota, 4,485,186, Cl. 502-128.000.

Kohnke, Ole B., to Testa-Laboratorium A/S. Simulator for practicing tracheal intubation. 4,484,896, Cl. 434-265.000.

Kohno, Hideki; Shiono, Hidemi; Sekihara, Kensuke; Yanaka, Shigenobu; and Suzuki, Takaji, to Hitachi Medical Corporation. Radiation image photographing apparatus. 4,485,480, Cl. 378-4.000.

Kohno, Satoshi, to Atsugi Motor Parts Company Limited. Torsional vibration damper. 4,484,898, Cl. 464-64.000.

Koike, Masao: *See*—
Shida, Yoshiaki; Fujikawa, Hisao; Koike, Masao; Murayama, Junichiro; and Akiyama, Shunichiro, 4,484,956, Cl. 148-12.0EA.

Kojima, Tetsuro: *See*—
Ishiguro, Shoji; Kojima, Tetsuro; and Mitsui, Akio, 4,485,169, Cl. 430-615.000.

Kolektor p. o.: *See*—
Kogej, Boris; and Potocnik, Joze, 4,484,389, Cl. 29-597.000.

Komaki, Takao: *See*—
Teraoka, Masanori; Komaki, Takao; and Matsumoto, Seiji, 4,485,304, Cl. 250-327.200.

Komatsu, Hitoshi: *See*—
Honda, Yukio; Komatsu, Hitoshi; and Mihara, Yoshiyuki, 4,484,883, Cl. 425-462.000.

Komatsu, Toshio: *See*—
Ohtsuka, Sadao; Komatsu, Toshio; Kondoh, Yukio; and Takahashi, Hideyuki, 4,485,133, Cl. 428-35.000.

Komatsu, Yuichiro: *See*—
Yamamoto, Katsumi; Komatsu, Yuichiro; and Hamada, Ikurou, 4,484,413, Cl. 51-165.710.

Kondoh, Yukio: *See*—
Ohtsuka, Sadao; Komatsu, Toshio; Kondoh, Yukio; and Takahashi, Hideyuki, 4,485,133, Cl. 428-35.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Arai, Norikazu, 4,484,803, Cl. 350-480.000.

Konoike, Takehiro; and Tamura, Hiroshi, to Murata Manufacturing Co., Ltd. High frequency dielectric ceramic compositions. 4,485,180, Cl. 501-135.000.

Konter, Wolfgang: *See*—
Musch, Rudiger; Gobel, Wilhelm; Konter, Wolfgang; and Muller, Eberhard, 4,485,216, Cl. 525-215.000.

Koontz, Curtis A. Invalid transfer device. 4,484,366, Cl. 5-86.000.

Korcusko, Peter J.; and Bohl, Fred R., to Ruesch Machine Company, Inc. Device for separating a coil of sheet metal from a construct. 4,484,716, Cl. 242-79.000.

Kordomenos, Panagiotis I.; and Kurple, Kenneth R., to Ford Motor Company. Thermosetting coating composition comprising polymeric catalyst. 4,485,199, Cl. 523-400.000.

Kores, Jeffrey G.: *See*—
Jerabek, Robert D.; Koren, Jeffrey G.; and Johnson, Mark W., 4,485,259, Cl. 564-292.000.

Kosters, Larry J., to Roto Press Limited. Silo bag filling machine. 4,484,606, Cl. 141-114.000.

Kostov, Georgi Y.: *See*—
Dimitrov, Issay M.; Boychev, Atanas P.; Ralchev, Vesselin L.; and Kostov, Georgi Y., 4,484,730, Cl. 266-201.000.

Kovach, Stephen M.: *See*—
Hettinger, William P., Jr.; Beck, H. Wayne; Carruthers, James D.; Cornelius, Edward B.; Kovach, Stephen M.; and Palmer, James L., 4,485,184, Cl. 502-67.000.

Kovacs, Bela V.; Nowicki, Roman M.; and Stickels, Charles A., to Ford Motor Company. Method of making ductile cast iron with improved strength. 4,484,953, Cl. 148-3.000.

Koyama, Mitsutoshi: *See*—
Kawaguchi, Tatsuzo; and Koyama, Mitsutoshi, 4,485,000, Cl. 204-298.000.

Kozbur, Nestor: *See*—
Reba, Imants; Schutz, Rudolph W.; and Kozbur, Nestor, 4,484,500, Cl. 83-98.000.

Kozuka, Nobuhiko: *See*—
Tsudaka, Hideaki; Washio, Takaji; Kozuka, Nobuhiko; Iseki, Masahide; Watanabe, Toshio; Kai, Masami; Yoshiyama, Toshio; and Sakata, Hiromi, 4,484,734, Cl. 271-9.000.

Kozuka, Shinichi: *See*—
Hatakeyama, Yoshiharu; and Kozuka, Shinichi, 4,485,065, Cl. 264-255.000.

Kraemer, John F.: *See*—
Varnum, Nancy C.; and Kraemer, John F., 4,484,616, Cl. 164-520.000.

Krajcovic, John: *See*—
Diggle, Edmund A., Jr.; and Krajcovic, John, 4,484,369, Cl. 8-151.000.

Kramer, Charles F.; Willard, Richard A.; and Kocher, Lawrence, to Steel Heddle Mfg. Co. Composite dual-face heddle frame slat. 4,484,604, Cl. 139-92.000.

Kraus, Charles E., to Excelermatic Inc. Hydraulically controlled infinitely variable traction roller transmission. 4,484,487, Cl. 74-200.000.

Kraus, Richard D.: *See*—
Kimberley, John A.; Cavanaugh, John B.; and Kraus, Richard D., 4,484,867, Cl. 417-499.000.

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Krauser, Michael, 4,484,542, Cl. 123-41.690.

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Kreinbihl, Mark L.; and Miller, Robert P., to Wavetek International, Inc. Plastic slide for sleds. 4,484,739, Cl. 272-56.50R.

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Tan, Sing L.; van de Polder, Leendert J.; and Kremers, Theodoor M. M., 4,485,401, Cl. 358-141.000.

Kriegel, Ernst: *See*—
Coenen, Hubert; Hagen, Rainer; and Kriegel, Ernst, 4,485,003, Cl. 208-10.000.

Krings, Josef: *See*—
Engelhaupt, Bernd, 4,484,842, Cl. 405-232.000.

Kristensson, Olle; and Nystrom, Bo R. G., to Lindab Nord AB. Method of producing insulated pipeline components. 4,485,057, Cl. 264-45.700.

Krohn, Ulrich: *See*—
Fuchs, Karl-Dieter; and Krohn, Ulrich, 4,484,981, Cl. 162-252.000.

Krolla, Hans-Georg: *See*—
Gliemeroth, Georg; Eichhorn, Uwe; Holzel, Eva; Ross, Ladwig; Krolla, Hans-Georg; Speit, Burkhard; Geiler, Volkmar; and Hoffmann, Hans-Jurgen, 4,485,178, Cl. 501-13.000.

Krueger, Ulf A.; and Sury, Yel S., to Ciba-Geigy Corporation. Process for making epoxy novolac resins with low hydrolyzable chlorine and low ionic chloride content. 4,485,221, Cl. 525-507.000.

Kruse, Heinrich: *See*—
Anders, Dietmar; Voigt, Jurgen; and Kruse, Heinrich, 4,484,878, Cl. 425-135.000.

Krutchen, Charles M.; and Wu, Wen-Pao, to Mobil Oil Corporation. Polymer foam thermoformation process and apparatus therefor. 4,485,059, Cl. 264-51.000.

Kubota, Ltd.: *See*—
Kato, Keizo; and Yamaue, Yasunobu, 4,484,488, Cl. 74-361.000.
Shintani, Atsunobu; Yamakami, Yoshiaki; and Hiraishi, Hisashi, 4,484,958, Cl. 148-38.000.

Kuchelmeister, Reinhold, to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG. Tube and rib heat exchanger. 4,484,621, Cl. 165-67.000.

Kuhlein, Klaus: *See*—
Bender, Heinz; Buch, Veit; Beyerle, Rudi; and Kuhlein, Klaus, 4,485,240, Cl. 548-449.000.

Kuhlmann, George E.: *See*—
Fox, Joseph D.; Kuhlmann, George E.; and Hundley, John G., 4,485,244, Cl. 549-245.000.

Kumamaru, Kuniaki; Hiraki, Shunichi; and Yonezawa, Toshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor device with selective nitride layer over channel stop. 4,485,393, Cl. 357-52.000.

Kunce, Larry D.: *See*—
Ahrens, Paul W.; Juhl, Randy R.; Kunce, Larry D.; and Katzer, Wayne E., 4,484,738, Cl. 272-56.50R.
Kunita, Masao: *See*—
Kurihara, Toshio; Yasunaga, Makoto; and Kunita, Masao, 4,484,519, Cl. 101-93.050.
Kuraray Co., Ltd.: *See*—
Satoh, Kenji; and Yonezu, Kiyoshi, 4,485,225, Cl. 526-331.000.
Kureha Kagaku Kagaku Kogyo Kabushiki Kaisha: *See*—
Masuhara, Eiichi; Kidoh, Kunizoh; and Bannai, Nobuo, 4,484,894, Cl. 433-168.000.
Kurihara, Toshio; Yasunaga, Makoto; and Kunita, Masao, to Citizen Watch Co. Ltd. Stylus driving apparatus for printers. 4,484,519, Cl. 101-93.050.
Kurosawa, Soichi; Wada, Katsuo; and Teranishi, Mitsuo, to Hitachi, Ltd. Turbine rotor with means for preventing air leaks through outward end of spacer. 4,484,858, Cl. 416-95.000.
Kurple, Kenneth R.: *See*—
Kordomenos, Panagiotis I.; and Kurple, Kenneth R., 4,485,199, Cl. 523-400.000.
Kurth, Richard R., to Sperry Corporation. Apparatus and method for detecting the onset of a frequency shift keyed signal. 4,485,448, Cl. 364-484.000.
Kurtz, Leonard D.; and LiCausi, Joseph, to BioResearch Inc. Method for relieving excess negativity in a drainage device. 4,484,908, Cl. 604-49.000.
Kurtz, Sarah: *See*—
Gordon, Roy G.; and Kurtz, Sarah, 4,485,265, Cl. 136-255.000.
Kusakabe, Hiromi; and Yoshida, Yoshihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Hysteresis circuit. 4,485,312, Cl. 307-290.000.
Kushigian, Anthony. Thread grinder. 4,484,931, Cl. 51-95.0TG.
Kusuki, Yoshihiro: *See*—
Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; Shimazaki, Hiroshi; and Isida, Tosio, 4,485,056, Cl. 264-41.000.
Kutaragi, Ken: *See*—
Someda, Mitsuo; Ohtsu, Takaji; and Kutaragi, Ken, 4,485,380, Cl. 340-784.000.
Kuwano, Yukinori; Nakano, Shoichi; Yokoo, Toshiaki; and Shibata, Kenichi, to Sanyo Electric Co., Ltd. Infrared detector with vibrating chopper. 4,485,305, Cl. 250-338.000.
Kuze, Takashi: *See*—
Hoyama, Masaru; and Kuze, Takashi, 4,485,263, Cl. 136-230.000.
Kybato, Inc.: *See*—
Williams, Floyd G., 4,484,844, Cl. 408-82.000.
Kyoto Yakuhin Kogyo Kabushiki Kaisha: *See*—
Kitao, Kazuhiko; and Nishimura, Ken-ichi, 4,485,033, Cl. 252-315.400.
La Telemecanique Electrique: *See*—
Lerude, Gerard; and Lesoile, Jacques, 4,485,365, Cl. 335-132.000.
Laboratories Debat: *See*—
Lemoine, Jean; and Riffaud, Jean-Pierre, 4,485,111, Cl. 424-285.000.
Lacey, William J., to Hospitak, Inc. Non-rigid universal coupling for health related equipment. 4,484,769, Cl. 285-12.000.
Lacour, Bernard: *See*—
Pernot, Jacques; and Lacour, Bernard, 4,484,892, Cl. 433-118.000.
LaFreniere, Dennis M. Illuminated spirit level. 4,484,393, Cl. 33-348.200.
Lahti, Uolevi L. Inverted horn loudspeaker. 4,485,275, Cl. 179-115.50H.
Laird, Daniel G.; Laird, James C.; and Tomlin, Robert L., to Sampling Technology, Inc. Gas sampling extractor and conditioning assembly. 4,484,481, Cl. 73-863.120.
Laird, James C.: *See*—
Laird, Daniel G.; Laird, James C.; and Tomlin, Robert L., 4,484,481, Cl. 73-863.120.
Lampietti, Bernard P., to Torin Corporation. Rear portion supporting mechanism in apparatus for machining elongated workpieces. 4,484,499, Cl. 82-48.000.
Lampin, Jean-Pierre; and Leclaire, Yves, to Institut National de Recherche Chimique Appliquee. Basic liquid composition suitable for producing transparent coatings or varnishes on solid surfaces, process for preparation of such varnishes, and varnishes produced thereby. 4,485,130, Cl. 427-387.000.
Lampley, Howard B.: *See*—
Reuteman, Harry J.; Lampley, Howard B.; and McElroy, Dale E., 4,484,694, Cl. 221-197.000.
Landis, Abraham L., to Hughes Aircraft Company. Isoimide containing oligomers. 4,485,231, Cl. 528-125.000.
Langstraat, Warren L.: *See*—
Mailand, John J.; Langstraat, Warren L.; and Smith, Daniel D., 4,484,932, Cl. 51-335.000.
Lanmon, C. P., II, to Schlumberger Technology Corporation. Method and apparatus for conducting wireline operations in a borehole. 4,484,628, Cl. 166-250.000.
Lannert, Kent P.; Shen, Chung Y.; and Trieu, Dat S., to Monsanto Company. Two-stage crystallization of nitrilotriacetonitrile from a hot solution. 4,485,049, Cl. 260-465.50R.
Lanza, Richard C.: *See*—
Osborne, Louis S.; and Lanza, Richard C., 4,485,307, Cl. 250-385.000.
Large, Scott F.; and Metcalf, Bruce D., to Mitre Corporation, The. Optical source peak wavelength control using a wavelength feedback network. 4,485,475, Cl. 372-32.000.
Larson, David J., Jr.: *See*—
Pirich, Ronald G.; and Larson, David J., Jr., 4,484,995, Cl. 204-192.00M.
Larson, George W.; Lee, William E.; and Lewis, Edward N., Jr., to United States of America, Air Force. Translating rudder pedal system. 4,484,722, Cl. 244-235.000.
Larson, Jonathan A. Customized chair and method of manufacturing. 4,484,782, Cl. 297-458.000.
Larter, Stephen R., to Union Oil Company of California. Field source rock evaluation apparatus. 4,485,071, Cl. 422-78.000.
Laude, Jean-Pierre, to Instruments S. A. Switching device between optical fibers. 4,484,793, Cl. 350-96.200.
Laufer, Konrad: *See*—
Martin, Fritz; Laufer, Konrad; and Ackermann, Arnold, 4,484,581, Cl. 128-346.000.
Laurel Bank Machine Co., Ltd.: *See*—
Goi, Kowichi, 4,484,735, Cl. 271-12.000.
Laurin, Dean, to Baxter Travenol Laboratories, Inc. Antibacterial seal. 4,485,064, Cl. 264-242.000.
Layton, Richard G.: *See*—
Caple, Gerald; and Layton, Richard G., 4,484,409, Cl. 47-2.000.
Leclaire, Yves: *See*—
Lampin, Jean-Pierre; and Leclaire, Yves, 4,485,130, Cl. 427-387.000.
Ledford, Billy R.; and Hartt, Alan J., to McDermott Incorporated. Apparatus for removing material such as concrete from underwater pipelines. 4,484,559, Cl. 125-1.000.
Ledis, Stephen L.; Sena, Ted; Crews, Harold R.; and Carter, James H., II, to Coulter Electronics, Inc. Method for three-volume differential determination of lymphocyte, monocyte and granulocyte populations of leukocytes. 4,485,175, Cl. 436-63.000.
Lee Electric (Lighting) Limited: *See*—
Beeston, Timothy W.; and Attrill, Laurence S., 4,485,434, Cl. 363-132.000.
Lee, Long-River. Plug-in type of safety wall switch and wall outlet. 4,485,282, Cl. 200-51.00R.
Lee, William E.: *See*—
Larson, George W.; Lee, William E.; and Lewis, Edward N., Jr., 4,484,722, Cl. 244-235.000.
Leenders, Wilhelmus H. A., to Stichting Research en Techniek van de Katholiek Universiteit. Apparatus for orthocyclically winding coils. 4,484,712, Cl. 242-25.00R.
Lees, Wayne L., to Duracell Inc. Pressure release device. 4,484,691, Cl. 220-89.03A.
Lefort, Emmanuel: *See*—
Duong, Tuan K.; Lefort, Emmanuel; and Bellanger, Maurice G., 4,485,272, Cl. 179-81.00B.
Legato Drilling Ltd.: *See*—
Evans, Francis C., 4,484,642, Cl. 175-65.000.
Lehne, John, to LeVan Specialty Co., Inc. Detachable low-profile latch assembly for releasably hinged closure panels. 4,484,773, Cl. 292-263.000.
Lehrman, David, to Ironees Company, The. Copper-metallized fabric for an ironing board cover. 4,484,400, Cl. 38-140.000.
Leiber, Heinz, to Robert Bosch GmbH. Dual-circuit brake apparatus. 4,484,784, Cl. 303-92.000.
Leiberich, Andreas: *See*—
Homan, Clarke G.; Scholz, Wilfried W.; Standish, William J.; and Leiberich, Andreas, 4,485,152, Cl. 428-670.000.
Leighton, Kenneth B.; and Silvestro, Michael J., to Spectrum Sports, Inc. Shin guard and method of making. 4,484,360, Cl. 2-22.000.
Leighton, Kenneth B.; and Silvestro, Michael J., to Spectrum Sports, Inc. Knee and elbow pad and method of making. 4,484,361, Cl. 2-24.000.
Leipold, Dianne P., to Hercules Incorporated. Gel toothpastes. 4,485,089, Cl. 424-49.000.
Leitner, Frank W.; and Bamberg, James B., to Motek Laboratories Ltd. Mercury slip rings and method. 4,484,789, Cl. 339-5.00L.
Lemelson, Jerome H.; and Grund, Christian. Video telephone. 4,485,400, Cl. 358-85.000.
Lemoine, Jean; and Riffaud, Jean-Pierre, to Laboratories Debat. Derivatives of 3-amino-1-benzofuranyloxy-2-propanol useful as cardioselective beta-blocking agents. 4,485,111, Cl. 424-285.000.
Lennon, John M.: *See*—
Szabo, Paul; Freeman, Daniel E.; Martin, Trevor I.; and Lennon, John M., 4,485,260, Cl. 564-402.000.
Lenz, Helmut: *See*—
Siedel, Joachim; Neumann, Ulrich; Ziegenhorn, Joachim; Batz, Hans-George; Lenz, Helmut; Pautz, Brigitte; and Albert, Winfried, 4,485,177, Cl. 436-547.000.
Leong, Sai: *See*—
Gantwerker, Scott; and Leong, Sai, 4,485,120, Cl. 426-625.000.
Lerude, Gerard; and Lesoile, Jacques, to La Telemecanique Electrique. Small contactor with a removable subset of auxiliary switches. 4,485,365, Cl. 335-132.000.
Lesoile, Jacques: *See*—
Lerude, Gerard; and Lesoile, Jacques, 4,485,365, Cl. 335-132.000.
LeVan Specialty Co., Inc.: *See*—
Lehne, John, 4,484,773, Cl. 292-263.000.
Lever Brothers Company: *See*—
Clarke, Terence A.; Edwards, Richard B.; and Irving, Graeme N., 4,485,030, Cl. 252-108.000.
Levite, Theodore: *See*—
Braunstein, Arie; Sohar, Ezra; and Levite, Theodore, 4,485,306, Cl. 250-372.000.
Levrai, Roland: *See*—
Carre , Jean-Jacques; and Levrai, Roland, 4,484,671, Cl. 188-352.000.

Lewallyn, Michael A.. Carpet beveling head device. 4,484,505, Cl. 83-869.000.

Lewiner, Jacques; Hennion, Claude; and Berthier, Gilbert. Coded electronic locking devices. 4,485,381, Cl. 340-825.310.

Lewis, Edward N., Jr.: *See*—
Larson, George W.; Lee, William E.; and Lewis, Edward N., Jr., 4,484,722, Cl. 244-235.000.

L'Homme, Louis; Pontbriand, Pierre; and Guichard, Georges, to Artopex Inc. Flush pull drawer handle for cabinet. 4,484,788, Cl. 312-320.000.

Liberty Glass Company: *See*—
Moss, James F., 4,484,774, Cl. 294-87.200.

LiCausi, Joseph: *See*—
Kurtz, Leonard D.; and LiCausi, Joseph, 4,484,908, Cl. 604-49.000.

Licciardello, Michael: *See*—
Boden, Richard M.; and Licciardello, Michael, 4,485,019, Cl. 252-8.600.

Licinit, Edward J.; and Sullivan, Paul G., to Emerson Electric Co. Concentric rod and tube sensor for thermal mass flow controller and flow meter. 4,484,472, Cl. 73-204.000.

Liekens, J. Alfons F.; and Hendriks, Ivo G. M., to Teepak, Inc. Packaged sheathed tubular strands and method and apparatus for making same. 4,484,679, Cl. 206-303.000.

Lin, An-Chung R.: *See*—
Merritt, Alfred R.; Cooke, Theodore M.; Lin, An-Chung R.; and Whitfield, Richard G., 4,484,948, Cl. 106-31.000.

Lindab Nord AB: *See*—
Kristensson, Olle; and Nystrom, Bo R. G., 4,485,057, Cl. 264-45.700.

Lipoderm Pharmaceuticals Limited: *See*—
Mezei, Michael; and Nugent, Fredric J., 4,485,054, Cl. 264-4.600.

Lizzi, Frederic L.: *See*—
Driller, Jack; Henriksen, William G.; Coleman, D. Jackson; and Lizzi, Frederic L., 4,484,569, Cl. 128-660.000.

Lofgren, Folke: *See*—
Johansson, Per-Olof; and Lofgren, Folke, 4,485,309, Cl. 250-560.000.

Logan, John S. B., Jr.: *See*—
Anctil, Stephen N.; Gleason, Robert F.; Hadfield, Don A.; Logan, John S. B., Jr.; and Richardson, Alfred G., 4,484,963, Cl. 156-56.000.

Logsdon, Duane D. Roof vent. 4,484,424, Cl. 52-199.000.

Loiselle, James R.: *See*—
Anderson, Christian D.; and Loiselle, James R., 4,485,345, Cl. 324-345.000.

Longhi, Luciano: *See*—
Toti, Gabriele; Guatta, Carlo; Chidini, Luciano; and Longhi, Luciano, 4,484,901, Cl. 474-28.000.

Longsworth, Ralph C., to Air Products and Chemicals, Inc. Apparatus for condensing liquid cryogen boil-off. 4,484,458, Cl. 62-514.0JT.

Loos, Jerold C.; Wakefield, James R.; and Foster, Frederick S., to Hall Systems, Inc. Programmable packaging grid including gripper conveyor monitoring system. 4,484,733, Cl. 270-54.000.

Lopez, Claudio: *See*—
Sarnoff, Stanley J.; Calkins, George B.; and Lopez, Claudio, 4,484,910, Cl. 604-136.000.

Loral Corporation: *See*—
Rothman, Irwin L., 4,484,974, Cl. 156-425.000.

Lori Corporation: *See*—
Hennessy, Thomas F., 4,484,463, Cl. 70-452.000.

Lucas Industries Public Limited Company: *See*—
Harris, Kenneth M.; Williams, Derek; and Tomsett, Derek W., 4,484,727, Cl. 251-77.000.

Luchio, Stephen W.: *See*—
DeRusha, Mark A.; Schultz, Thomas E.; and Luchio, Stephen W., 4,484,574, Cl. 128-156.000.

Ludwig Engel KG: *See*—
Schwarz, Georg, 4,484,880, Cl. 425-192.00R.

Lugarini-Tardy, Joelle M. J.: *See*—
Murguet, Robert F.; and Lugarini-Tardy, Joelle M. J., 4,484,365, Cl. 3-1.500.

Lunardi, Gerhard; and Wipp, Gerhard, to Inventio AG. Guiding apparatus for the travel elements of endless conveyors, such as escalators and the like. 4,484,674, Cl. 198-332.000.

Lushis, Donald V.: *See*—
Singer, Victor; Lushis, Donald V.; and Kirschner, Thomas J., Jr., 4,484,439, Cl. 60-230.000.

Luverne Truck Equipment, Inc.: *See*—
Heck, Steven R., 4,484,699, Cl. 224-42.210.

Lyons, James E., to Sun Tech, Inc. Amine promoted catalytic hydrogenation of carboxylic acid anhydrides to lactones or esters. 4,485,246, Cl. 549-302.000.

Lyons, James E.: *See*—
Hsu, Chao-Yang; and Lyons, James E., 4,485,245, Cl. 549-302.000.

M.A.N. Roland Druckmaschinen AG: *See*—
Simeth, Claus, 4,484,522, Cl. 101-248.000.

Maa, Peter S.; Veluswamy, Lavanga R.; and Vernon, Lonnie W., to Exxon Research and Engineering Co. Liquefaction process. 4,485,008, Cl. 208-10.000.

Maas-Rowe Carillons, Inc.: *See*—
Hayward, Gamon B., 4,484,535, Cl. 116-171.000.

Machesney, Gregory W., to Control Data Corporation. Quarterwave choke for a microwave oven quartz lamp. 4,485,285, Cl. 219-10.55D.

Machii, Norihisa; Manago, Atsushi; and Narukawa, Sadao, to Osaka Gas Company Ltd. Pulse combustion burner. 4,484,885, Cl. 431-1.000.

Madsen, John G., to B & W Diesel, A/S. Hydraulically actuated exhaust valve for a reciprocating combustion engine. 4,484,545, Cl. 123-90.120.

Maegawa, Toshiyuki; and Nakatsuji, Haruo, to Sharp Kabushiki Kaisha. Method for recording digital information. 4,485,415, Cl. 360-46.000.

Maekawa, Harumi: *See*—
Sukeda, Toshiaki; Maekawa, Harumi; and Takai, Sakan, 4,485,458, Cl. 365-1.000.

Maggi, Carlo Alberto: *See*—
Pestellini, Vittorio; Ghelardoni, Mario; Maggi, Carlo Alberto; Roncucci, Gabrio; and Meli, Alberto, 4,485,112, Cl. 424-285.000.

Magistro, Angelo J., to B. F. Goodrich Company, The. Hydrogen chloride recovery process. 4,485,081, Cl. 423-481.000.

Magnetic Peripherals, Inc.: *See*—
Bremmer, Robert A., 4,485,418, Cl. 360-77.000.

Maher, Robert A., to Texas Instruments Incorporated. Global position system (GPS) multiplexed receiver. 4,485,383, Cl. 343-352.000.

Maher, Robert J.; and Tooson, Ronald, to Douthitt Corporation. Vacuum printer. 4,484,813, Cl. 355-93.000.

Mahyera, Anil; Brest Van Kempen, Carel J. H.; Sweet, Robert M.; and Davidson, Amber C., to Methane Drainage Ventures. Gas-liquid-solids separation system. 4,484,643, Cl. 175-206.000.

Mailand, John J.; Langstraat, Warren L.; and Smith, Daniel D., to Minnesota Mining and Manufacturing Company. Sanding wheel. 4,484,932, Cl. 51-335.000.

Mainiero, Joseph J.; Mainiero, Michael R.; and Stanley, Arthur T., to Man Barrier Corporation. Barrier coil dispenser. 4,484,729, Cl. 256-1.000.

Mainiero, Michael R.: *See*—
Mainiero, Joseph J.; Mainiero, Michael R.; and Stanley, Arthur T., 4,484,729, Cl. 256-1.000.

Majaniemi, Pekka, to OY Tampella AB. Extended nip press for a paper machine. 4,484,982, Cl. 162-358.000.

Maki, Toshio: *See*—
Nihei, Tetsuo; Maki, Toshio; and Sakuma, Kazuyoshi, 4,484,464, Cl. 72-38.000.

Makino, Daisuke; and Miyadera, Yasuo, to Hitachi Chemical Company, Ltd. Method of preparing polyamide acid for processing of semiconductors. 4,485,234, Cl. 528-329.000.

Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; Shimazaki, Hiroshi; and Isida, Tosio, to Ube Industries, Ltd. Production of aromatic polyimide separating membranes. 4,485,056, Cl. 264-41.000.

Makino, Motohiko: *See*—
Imamura, Kenji; Saitoh, Hiroshi; Kakizaki, Katsuhisa; and Makino, Motohiko, 4,485,162, Cl. 430-106.600.

Mamiya, Yoneji: *See*—
Sekimoto, Kunitoshi; Mamiya, Yoneji; and Ishikawa, Tadashi, 4,485,098, Cl. 424-105.000.

Man Barrier Corporation: *See*—
Mainiero, Joseph J.; Mainiero, Michael R.; and Stanley, Arthur T., 4,484,729, Cl. 256-1.000.

Manago, Atsushi: *See*—
Machii, Norihisa; Manago, Atsushi; and Narukawa, Sadao, 4,484,885, Cl. 431-1.000.

Mandel, Adolf: *See*—
Holl, Walter; and Mandel, Adolf, 4,485,155, Cl. 429-194.000.

Mandel, Frederick S.: *See*—
Weston, Charles W.; Wen, John W.; and Mandel, Frederick S., 4,485,078, Cl. 423-320.000.

Manini, Enrico: *See*—
Dagna, Giandomenico; Manini, Enrico; and Tadini, Giorgio, 4,485,386, Cl. 346-75.000.

Mannesmann AG: *See*—
Gruner, Manfred; and Gugel, Bernd, 4,485,425, Cl. 361-153.000.
Stucke, Walter; and Glissmann, Karl-Heinz, 4,484,877, Cl. 425-113.000.

Mannesmann Aktiengesellschaft: *See*—
Buchheit, Otto K., 4,484,465, Cl. 72-250.000.

Mannesmann Rexroth GmbH: *See*—
Mucheyer, Norbert, 4,484,480, Cl. 73-862.640.

Manning, William P.: *See*—
Ferrin, Charles R.; and Manning, William P., 4,484,934, Cl. 55-32.000.

Mansell, John D., to PPG Industries, Inc. Electro organic method and apparatus for carrying out same. 4,484,989, Cl. 204-59.00R.

Marand, Bernard: *See*—
Boucher, Andre ; and Marand, Bernard, 4,484,959, Cl. 148-127.000.

Marchal, Paul H.; and Doucin, Guy F., to Air Industrie. Installations for processing a product in a gas medium. 4,484,889, Cl. 432-219.000.

Marconi Avionics Limited: *See*—
Ellis, Stafford M.; and Keay, James P. M., 4,484,381, Cl. 24-523.000.

Maringer, Robert E., to Allegheny Ludlum Steel Corporation. Method of and apparatus for strip casting. 4,484,614, Cl. 164-463.000.

Marker-Patentverwertungsgesellschaft mbH.: *See*—
Sedlmair, Gerhard, 4,484,763, Cl. 280-618.000.

Marker-Patentverwertungsgesellschaft mbH.: *See*—
Knabel, Walter; Klubitschko, Gerd; and Stempfhuber, Lorenz, 4,484,761, Cl. 280-612.000.

Markisches Werk GmbH: *See*—
Wendel, Nikolaus; and Plener, Joachim, 4,484,544, Cl. 123-90.300.

Marshall, Robert W., to North American Manufacturing Company. Method for melting a charge of bulk solid metal. 4,484,947, Cl. 75-65.00R.

Martin, Fritz; Laufer, Konrad; and Ackermann, Arnold, to AESCULAP-WERKE AG vormals Jetter & Scheerer. Aneurysm clip. 4,484,581, Cl. 128-346.000.

Martin, Trevor I.: *See*—
Szabo, Paul; Freeman, Daniel E.; Martin, Trevor I.; and Lenaon, John M., 4,485,260, Cl. 564-402.000.

Martinez, John L., to Badger Company, Inc., The. Method for conducting wet grinding of phosphate rock in a phosphoric acid production plant. 4,485,077, Cl. 423-320.000.

Martins, Agusto B.: *See*—
Amkraut, Alfred A.; and Martins, Agusto B., 4,484,923, Cl. 604-894.000.

Maruyama, Kouji: *See*—
Nomura, Takeshi; Maruyama, Kouji; Ueno, Hiroshi; Inaba, Naomi; and Yoda, Makota, 4,485,187, Cl. 502-134.000.
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Oberdorf, Manfred, 4,484,432, Cl. 53-575.000.

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Sprenger, Heinz; and Scholz, Christoph, 4,485,149, Cl. 428-627.000.

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Palermo, Michael A.; and Mason, James L., 4,484,692, Cl. 220-346.000.

Mason, Murray R., to Bendix Corporation, The. Differential drive mechanism. 4,484,495, Cl. 74-785.000.

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Bates, Frank S.; and Cohen, Robert E., 4,485,207, Cl. 524-751.000.
Bell, Eugene, 4,485,096, Cl. 424-95.000.
Bell, Eugene, 4,485,097, Cl. 424-95.000.
Osborne, Louis S.; and Lanza, Richard C., 4,485,307, Cl. 250-385.000.

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Nakahata, Kimio; Tajima, Hatsuo; Iwami, Naoki; Masuda, Shunichi; Shimizu, Katsuichi; Kawatsura, Yoshihiro; Suzuki, Koji; and Yokomizo, Yoshikazu, 4,484,811, Cl. 355-14.0CH.

Masuhara, Eiichi; Kidoh, Kunizoh; and Bannai, Nobuo, to Masuhara, Eiichi; and Kureha Kagaku Kagaku Kogyo Kabushiki Kaisha. Sheet for lining denture base. 4,484,894, Cl. 433-168.000.

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Kanno, Shigeyuki; and Matsubara, Hajime, 4,484,498, Cl. 82-36.00B.

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Matsubara, Mamoru, to Asian Kogyo Kabushiki Kaisha. Variable venturi carburetor. 4,484,557, Cl. 123-439.000.

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Okimoto, Haruo; and Matsuda, Ikuo, 4,484,556, Cl. 123-432.000.

Matsuhisa, Koh, to Ricoh Company, Ltd. Carriage drive means using cables or the like. 4,484,485, Cl. 74-89.220.

Matsui, Kenji; and Watanabe, Masakatu, to Omron Tateisi Electronics Co. Display control apparatus. 4,485,378, Cl. 340-750.000.

Matsumoto, Hajime: *See*—
Matsumoto, Takao; and Matsumoto, Hajime, 4,484,406, Cl. 446-487.000.

Matsumoto, Hiroshi: *See*—
Kirino, Osamu; Hashimoto, Shunichi; Matsumoto, Hiroshi; and Oshio, Hiromichi, 4,484,942, Cl. 71-118.000.
Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Matsumoto, Hiroshi; and Kamoshita, Katsuzo, 4,484,940, Cl. 71-96.000.
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Tanaka, Kazuyoshi; Kato, Hisatoyo; and Matsumoto, Seiji, 4,485,302, Cl. 250-327.200.
Teraoka, Masanori; Komaki, Takao; and Matsumoto, Seiji, 4,485,304, Cl. 250-327.200.

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Matsumura, Hideki, to Tokyo Institute of Technology. Method for producing a fluorine-containing amorphous semiconductor. 4,485,121, Cl. 427-39.000.

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Furumura, Kyozaburo; and Matsunaga, Shigeki, 4,485,024, Cl. 252-62.560.

Matsuo, Tadao; Mori, Shuji; and Tanaka, Kenzo, to Mitsuboshi Belting Ltd. Process for the production of high impact block copolyamide. 4,485,213, Cl. 525-123.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Fujita, Takayuki; Yoshida, Yoshiaki; Higashiura, Toshiyuki; and Tanaka, Kunio, 4,484,693, Cl. 221-119.000.
Onishi, Masami; Kitamura, Yoshinori; and Nishikawa, Shoji, 4,484,806, Cl. 354-404.000.
Sekido, Satoshi; Tachibana, Hirokazu; and Ninomiya, Yoshito, 4,485,191, Cl. 502-303.000.
Takewa, Hiroyuki; Satoh, Katsuaki; and Ishikawa, Seiichi, 4,484,383, Cl. 29-169.500.
Ueda, Yasukiyo; Murakami, Hirokuni; and Iwasa, Takashi, 4,485,296, Cl. 219-505.000.

Matsushita Electronics Corporation: *See*—
Ninagawa, Chikayoshi; Ashizaki, Shigeya; Kimura, Masamichi; and Hosokawa, Atsushi, 4,485,328, Cl. 313-466.000.

Matsuura, Hideaki: *See*—
Shiga, Akinobu; Fukui, Yoshiharu; Sasaki, Toshio; Okawa, Masahisa; and Matsuura, Hideaki, 4,485,035, Cl. 502-115.000.

Matsuura, Hitoshi; Yamazaki, Etsuo; and Sakurai, Hiroshi, to Fanuc Ltd. Method and apparatus for sensing current position in position control system. 4,485,338, Cl. 318-569.000.

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Asari, Akira; Fukuda, Tamotsu; and Matsuura, Shiro, 4,484,881, Cl. 425-405.001.

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Higuchi, Akira; Ishigaki, Naoyuki; Matsuura, Yutaka; and Yamamoto, Hitoshi, 4,484,957, Cl. 148-31.570.

Mattel, Inc.: *See*—
Fekete, Ferenc, 4,485,466, Cl. 369-177.000.
Fogarty, A. Edward; and Fogarty, Bonnie R., 4,484,408, Cl. 446-399.000.

Mattson, Kenneth V.: *See*—
Brenholt, David L.; Fischer, Paul M.; and Mattson, Kenneth V., 4,484,860, Cl. 416-182.000.

Matz, Gary F.: *See*—
Sherwood, Nancy S.; Costello, Christine A.; and Matz, Gary F., 4,484,631, Cl. 166-274.000.

Maubois, Jean-Louis: *See*—
Roger, Loic; Maubois, Jean-Louis; Brule, Gerard; and Piot, Michel, 4,485,040, Cl. 260-122.000.

Maurel, Pierre, to Uranium Pechiney Ugine Kuhlmann. Process for the extraction of arsenic from aqueous solutions containing alkali metal carbonate, sulfate and hydroxide or hydrogen carbonate and at least on metal including vanadium, uranium and molybdenum. 4,485,075, Cl. 423-55.000.

Maus, Otfrid, to Schenck-Auto-Service-Gerate GmbH. Unbalance measurement device for determination of unbalance according to position and magnitude. 4,484,474, Cl. 73-462.000.

Maxey, Joel W. Adjustable non-throttling control apparatus for spark ignition internal combustion engines. 4,484,543, Cl. 123-80.0BA.

Maximov, Vladimir G.: *See*—
Apilat, Vitaly Y.; Goriletsky, Valentin I.; Maximov, Vladimir G.; Mjulendorf, Oleg S.; Radkevich, Alexei V.; Chernitsky, Leonid D.; Eidelman, Lev G.; Vakulenko, Viktor Y., deceased; and Vakulenko, Raisa P., administrator, 4,485,072, Cl. 422-249.000.

Mayer, James R., to Cooper Industries, Inc. Positioning control system for rock drill support apparatus. 4,484,637, Cl. 173-2.000.

Mazda Motor Corporation: *See*—
Gokimoto, Hiroyuki; and Kiyomitsu, Isao, 4,484,776, Cl. 296-65.00R.

Mazo, Boris M.: *See*—
Feklin, Valentin I.; Shvets, Viktor B.; and Mazo, Boris M., 4,484,640, Cl. 175-19.000.

McClure, Cole R., Jr., to Bechtel International Corporation. Seismic shield. 4,484,423, Cl. 52-167.000.

McCrone, James G.; and Heiser, Warren R. Stringing tool for tennis rackets and the like. 4,484,742, Cl. 273-73.00A.

McDermott Incorporated: *See*—
Ledford, Billy R.; and Hartt, Alan J., 4,484,559, Cl. 125-1.000.

McElroy, Arthur H., to McElroy Manufacturing, Inc. Hand held apparatus for joining small diameter plastic pipe. 4,484,975, Cl. 156-503.000.

McElroy, Dale E.: *See*—
Reuteman, Harry J.; Lampley, Howard B.; and McElroy, Dale E., 4,484,694, Cl. 221-197.000.

McElroy Manufacturing, Inc.: *See*—
McElroy, Arthur H., 4,484,975, Cl. 156-503.000.

McGlinsky, Robert G.; Allyn, Steve; and Whittenberg, James R., to Contamination Control Corp. Pneumatic conveying scrap paper salvage system. 4,484,843, Cl. 406-170.000.

McGrew, John. Apparatus for guiding a vehicle pulling an implement including trench forming and following means. 4,484,647, Cl. 180-131.000.

McGuire, David P.: *See*—
Nandlal, Samlal; and McGuire, David P., 4,484,839, Cl. 405-211.000.
Nandlal, Samlal; and McGuire, David P., 4,484,840, Cl. 405-211.000.

McHugh, Thomas K., to First Edgemont Corp. System for monitoring energy usage in separate units of multiple-unit structure. 4,484,620, Cl. 165-11.00R.

McIntyre, William A., to FMC Corporation. Hydrogen peroxide process. 4,485,084, Cl. 423-588.000.

McKeough, David T.: *See*—
Chang, Wen-Hsuan; Ambrose, Ronald R.; McKeough, David T.; Porter, Samuel, Jr.; and Johnston, Byron K., 4,485,228, Cl. 528-84.000.

McKinney, Ronald J., to Du Pont de Nemours, E. I., and Company. Dimerizing acrylates to hexenedioates using ruthenium compound catalysts. 4,485,256, Cl. 560-202.000.

McMickle, Robert L.; Rumbaugh, James T.; and Netsch, Robert L., to Berkley & Company, Inc. Hollow conductive medical tubing. 4,484,586, Cl. 128-786.000.

McNerney, Andrew J.: *See*—
Minati, Kurt F.; Morgan, Gerry H.; McNerney, Andrew J.; and Schauer, Felix, 4,485,266, Cl. 174-15.0CA.

McPhee, Charles J., to American Hospital Supply Corporation. Medical solution container and port construction. 4,484,916, Cl. 604-256.000.

Measuronics Corporation: *See*—
Schumacher, Peter M., 4,485,409, Cl. 358-294.000.

Medical Magnetics, Inc.: *See*—
Smiley, Harry; and Blechman, Abraham, 4,484,895, Cl. 433-215.000.

Meguro, Kazunori: *See*—
Inoue, Susumu; Sakashita, Isao; Meguro, Kazunori; and Hamaguchi, Kunio, 4,485,143, Cl. 428-334.000.

Meier, Kurt: *See*—
Buhler, Niklaus; Reber, Jean F.; Meier, Kurt; and Rusek, Milos, 4,484,992, Cl. 204-157.10R.

Meiji Seika Kaisha Ltd.: *See*—
Katano, Kiyoaki; Atsumi, Kunio; Kai, Fumio; Nishihata, Ken; and Akita, Eiichi, 4,485,235, Cl. 544-021.000.

Meiller, Hermann; and Grassl, Johann, to Grammer, Willibald. Airsprung seat. 4,484,723, Cl. 248-550.000.

Meininger, Fritz: *See*—
Hoyer, Ernst; Meininger, Fritz; and Fass, Rudolf, 4,485,041, Cl. 534-637.000.

Melamine Chemicals, Inc.: *See*—
Allan, G. Graham, 4,484,980, Cl. 162-73.000.

Melford, David A.; and Whittington, Keith R., to TI (Group Services) Limited. Electro-magnetic stirring. 4,484,615, Cl. 164-504.000.

Meli, Alberto: *See*—
Pestellini, Vittorio; Ghelardoni, Mario; Maggi, Carlo Alberto; Roncucci, Gabrio; and Meli, Alberto, 4,485,112, Cl. 424-285.000.

Memorial Hospital for Cancer & Allied Diseases: *See*—
Rottenberg, David A.; Miodownik, Saul; and Epifanio, William E., II, 4,484,582, Cl. 128-630.000.

Mencke, Arlene J.: *See*—
Kato, Kenneth H.; and Mencke, Arlene J., 4,485,029, Cl. 252-106.000.

Meno, Frank; and Reddy, P. S., to University of Pittsburgh. Commissurotomy catheter apparatus and method. 4,484,579, Cl. 128-305.000.

Mentzer, William R., to Kidde, Inc. Multiple offset boom extension. 4,484,686, Cl. 212-188.000.

Merck & Co., Inc.: *See*—
Boger, Joshua A.; and Veber, Daniel F., 4,485,099, Cl. 424-177.000.

Mercury Development Corporation: *See*—
Roberts, Lewis L., 4,484,422, Cl. 52-137.000.

Merritt, Alfred R.; Cooke, Theodore M.; Lin, An-Chung R.; and Whitfield, Richard G., to Exxon Research and Engineering Co. Natural wax-containing ink jet inks. 4,484,948, Cl. 106-31.000.

Merritt, Sears W.: *See*—
Hunsinger, Billy J.; Merritt, Sears W.; and Swanson, David A., 4,485,363, Cl. 333-193.000.

Mertens, Josephus C.: *See*—
Kennis, Ludo E. J.; Vandenberk, Jan; and Mertens, Josephus C., 4,485,107, Cl. 424-251.000.

Meserow, Francis P.; and Mills, Frank H., to Meserow, Francis P. Non-wired perimeter protective system. 4,485,374, Cl. 340-541.000.

Messe , Gerard, to Alsthom-Atlantique. Electrical shunt reactor coil. 4,485,368, Cl. 336-84.00M.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See*—
Steinmetz, Guenter; Brezina, Walter; and Steenbeck, Ulf, 4,484,666, Cl. 188-165.000.

Metal Research Corporation: *See*—
Ototani, Tohei, 4,484,946, Cl. 75-58.000.

Metcalf, Bruce D.: *See*—
Large, Scott F.; and Metcalf, Bruce D., 4,485,475, Cl. 372-32.000.

Methane Drainage Ventures: *See*—
Mahyera, Anil; Brest Van Kempen, Carel J. H.; Sweet, Robert M.; and Davidson, Amber C., 4,484,643, Cl. 175-206.000.

Metz-Mannheim GmbH: *See*—
Metz, Walter, 4,484,473, Cl. 73-432.0AD.

Metz, Walter, to Metz-Mannheim GmbH. Monitoring and signalling tape head apparatus. 4,484,473, Cl. 73-432.0AD.

Meyers, John D.: *See*—
Miles, Larry L.; and Meyers, John D., 4,485,467, Cl. 370-14.000.

Mezei, Michael; and Nugent, Fredric J., to Lipoderm Pharmaceuticals Limited. Method of encapsulating biologically active materials in multilamellar lipid vesicles (MLV). 4,485,054, Cl. 264-4.600.

Michel, Raymond, to Delasco. Peristaltic pump. 4,484,864, Cl. 417-477.000.

Michel, Walter C. Apparatus for tensioning a cover sheet over an open-topped rectangular box or building. 4,484,777, Cl. 296-98.000.

Micro Consultants Limited: *See*—
Searby, Anthony D., 4,485,402, Cl. 358-160.000.

Micro-Mega S.A.: *See*—
Pernot, Jacques; and Lacour, Bernard, 4,484,892, Cl. 433-118.000.

Microscience Systems Corp.: *See*—
Drumheller, Carl E., 4,485,387, Cl. 346-140.00R.

Midwest Elastomers, Inc.: *See*—
Davis, Fred R., 4,485,201, Cl. 524-68.000.

Migliarese-Caputi, Jean-Louis: *See*—
de Sivry, Bruno J. M.; Migliarese-Caputi, Jean-Louis; Herve, Guy J.; Baylot, Michel P.; Colas, Claude J.; and Baudet, Pierre, 4,485,344, Cl. 324-207.000.

Mignen, Bernard, to Essilor International Cie Generale d'Optique. Multifocal ophthalmic lenses. 4,484,804, Cl. 351-168.000.

Mihara, Yoshiyuki: *See*—
Honda, Yukio; Komatsu, Hitoshi; and Mihara, Yoshiyuki, 4,484,883, Cl. 425-462.000.

Miles, Carol L.: *See*—
Smith, Russell P.; Dunlop, Guy R.; and Miles, Carol L., 4,485,485, Cl. 382-65.000.

Miles, Larry L.; and Meyers, John D., to Teknekron Infoswitch Corporation. Digital information switch matrix with on-line/off-line diagnostic features. 4,485,467, Cl. 370-14.000.

Milkovic, Miran, to General Electric Company. Electronic watt and watthour meter having analog and digital outputs with automatic error correction. 4,485,343, Cl. 324-142.000.

Miller, Ira: *See*—
Davies, Robert B.; Dotson, Robert N.; and Miller, Ira, 4,485,319, Cl. 307-530.000.

Miller, Richard B.; and Richardson, Ryden L., to Union Oil Company of California. Regeneration and reactivation of deactivated hydrorefining catalyst. 4,485,183, Cl. 502-25.000.

Miller, Robert P.: *See*—
Kreinbihl, Mark L.; and Miller, Robert P., 4,484,739, Cl. 272-56.50R.

Mills, Frank H.: *See*—
Meserow, Francis P.; and Mills, Frank H., 4,485,374, Cl. 340-541.000.

Minati, Kurt F.; Morgan, Gerry H.; McNerney, Andrew J.; and Schauer, Felix, to United States of America, Energy. Termination for a superconducting power transmission line including a horizontal cryogenic bushing. 4,485,266, Cl. 174-15.0CA.

Minch, Morris L.; and Wagner, Theodore W., to Siemens Corporation. Apparatus for transmitting and/or receiving balanced signals on a two-wire telecommunication line. 4,485,277, Cl. 179-170.0NC.

Mineur, Thomas L.: *See*—
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Ministry of International Trade & Industry: *See*—
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Minnesota Mining and Manufacturing: *See*—
Kaplan, Morton R., 4,485,268, Cl. 174-84.00C.

Minnesota Mining and Manufacturing Company: *See*—
Bultman, David A.; and Olson, Maynard H., 4,484,990, Cl. 204-106.000.
Chang, Robert W. H., 4,485,090, Cl. 424-52.000.
Freerks, Conrad T., 4,484,419, Cl. 51-391.000.
Kato, Kenneth H.; and Mencke, Arlene J., 4,485,029, Cl. 252-106.000.
Mailand, John J.; Langstraat, Warren L.; and Smith, Daniel D., 4,484,932, Cl. 51-335.000.
Rasmussen, Jerald K.; Heilmann, Steven M.; and Palensky, Frederick J., 4,485,236, Cl. 544-69.000.

Minolta Camera Kabushiki Kaisha: *See*—
Yoshiyama, Ichiro; Yuasa, Yoshio; Taniguchi, Nobuyuki; and Ishikawa, Norio, 4,485,336, Cl. 315-241.00P.

Minor, James C.: *See*—
Balthis, Vernon M.; Evans, Howard E.; and Minor, James C., 4,485,066, Cl. 264-341.000.

Miodownik, Saul: *See*—
Rottenberg, David A.; Miodownik, Saul; and Epifanio, William E., II, 4,484,582, Cl. 128-630.000.

Miracle Recreation Equipment Company: *See*—
Ahrens, Paul W.; Juhl, Randy R.; Kunce, Larry D.; and Katzer, Wayne E., 4,484,738, Cl. 272-56.50R.

Misono, Masayoshi, to Hitachi, Ltd. Color picture tube. 4,485,327, Cl. 313-414.000.

Mita Industrial Company Limited: *See*—
Miyakawa, Nobuhiro, 4,485,163, Cl. 430-122.000.
Tsudaka, Hideaki; Washio, Takaji; Kozuka, Nobuhiko; Iseki, Masahide; Watanabe, Toshio; Kai, Masami; Yoshiyama, Toshio; and Sakata, Hiromi, 4,484,734, Cl. 271-9.000.

Mitani, Mitsuaki: *See*—
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Mitchell, Hal D.; and Rust, David C., to A-T-O Inc. Shock attenuation system for headgear. 4,484,364, Cl. 2-413.000.

Mitre Corporation, The: *See*—
Large, Scott F.; and Metcalf, Bruce D., 4,485,475, Cl. 372-32.000.

Mitsubishi Chemical Industries Limited: *See*—
Kikumoto, Ryoji; Fukami, Harukazu; Hara, Hiroto; Ninomiya, Kunihiro; and Sugano, Mamoru, 4,485,258, Cl. 562-471.000.
Suzuki, Tetsumi; Murayama, Tetsuo; Ono, Hitoshi; and Aramaki, Shinji, 4,485,160, Cl. 430-59.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Hirasawa, Shigeichi; and Horiguchi, Akira, 4,485,347, Cl. 329-50.000.
Kawaguchi, Takeo; and Sato, Takashi, 4,484,814, Cl. 335-301.000.
Mizuno, Masanori; and Kitani, Motoe, 4,485,292, Cl. 219-123.000.
Nishikawa, Akira; and Okazaki, Shinichi, 4,484,757, Cl. 280-423.00R.
Nomura, Masami, 4,484,664, Cl. 187-29.00R.
Ozaki, Minoru; and Tanaka, Kunimaro, 4,485,417, Cl. 360-73.000.

Tabata, Youichiro; Ueguri, Shigeo; Mizuno, Takaji; Segawa, Hirohisa; and Hiramoto, Seigo, 4,485,293, Cl. 219-130.310.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Ohtsuka, Sadao; Komatsu, Toshio; Kondoh, Yukio; and Takahashi, Hideyuki, 4,485,133, Cl. 428-35.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Irie, Nobuhiko; and Hasegawa, Akira, 4,484,875, Cl. 425-47.000.
Okawachi, Toshio, 4,484,874, Cl. 425-47.000.
Watanabe, Yoshikazu; Tsukahara, Toshihide; and Ota, Shozo, 4,484,967, Cl. 156-151.000.
Mitsubishi Kinzoku Kabushiki Kaisha: *See*—
Nishino, Yoshio; and Kirigaya, Seiichi, 4,485,147, Cl. 428-550.000.
Mitsuboshi Belting Ltd.: *See*—
Matsuo, Tadao; Mori, Shuji; and Tanaka, Kenzo, 4,485,213, Cl. 525-123.000.
Mitsui, Akio: *See*—
Ishiguro, Shoji; Kojima, Tetsuro; and Mitsui, Akio, 4,485,169, Cl. 430-615.000.
Mittal, Faquir C., to Sperry Corporation. Apparatus for cooling integrated circuit chips. 4,485,429, Cl. 361-386.000.
Miura, Hirohisa; Satou, Hiroshi; Natsume, Toshio; and Katagiri, Hidenori, to Toyota Jidosha Kabushiki Kaisha. Method and apparatus for making a fine powder compound of a metal and another element. 4,484,943, Cl. 75-0.50B.
Miura, Katsuto, to Toyota Jidosha Kabushiki Kaisha. Ignition timing control apparatus for an internal combustion engine. 4,484,555, Cl. 123-407.000.
Miyadera, Yasuo: *See*—
Makino, Daisuke; and Miyadera, Yasuo, 4,485,234, Cl. 528-329.000.
Miyajima, Takeshi: *See*—
Ogura, Yukio; and Miyajima, Takeshi, 4,484,475, Cl. 73-579.000.
Miyakawa, Nobuhiro, to Mita Industrial Company Limited. One-component magnetic dry developer comprises triiron tetroxide having specified coercive force and vinyl aromatic polymer and process of use. 4,485,163, Cl. 430-122.000.
Miyake, Kiyohide: *See*—
Sato, Hidemi; Kaneda, Aizo; Yokono, Hitoshi; Ohashi, Atsuyoshi; Miyake, Kiyohide; Kodama, Toshiro; and Suzuki, Kiichi, 4,484,796, Cl. 350-96.210.
Mizuhashi, Masnoru; and Gotoh, Yoshio, to Asahi Glass Company Ltd. Glass body provided with an alkali diffusion-preventing silicon oxide layer. 4,485,146, Cl. 428-428.000.
Mizuno, Masanori; and Kitani, Motoe, to Mitsubishi Denki Kabushiki Kaisha. Arc blowing control method and apparatus for pulse arc welding. 4,485,292, Cl. 219-123.000.
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Tabata, Youichiro; Ueguri, Shigeo; Mizuno, Takaji; Segawa, Hirohisa; and Hiramoto, Seigo, 4,485,293, Cl. 219-130.310.
Mjulendorf, Oleg S.: *See*—
Apilat, Vitaly Y.; Goriletsky, Valentin I.; Maximov, Vladimir G.; Mjulendorf, Oleg S.; Radkevich, Alexei V.; Chernitsky, Leonid D.; Eidelman, Lev G.; Vakulenko, Viktor Y., deceased; and Vakulenko, Raisa P., administrator, 4,485,072, Cl. 422-249.000.
Mobil Oil Corporation: *See*—
Chung, Harold S., 4,484,630, Cl. 166-263.000.
Gunter, Harvey R.; Stutzman, Gary L.; and Salerno, Stephen G., 4,485,217, Cl. 525-240.000.
Krutchen, Charles M.; and Wu, Wen-Pao, 4,485,059, Cl. 264-51.000.
Schmitt, Kirk D.; and Shim, Joosup, 4,485,026, Cl. 252-78.100.
Molaire, Michel F.: *See*—
Scozzafava, Michael; and Molaire, Michel F., 4,485,161, Cl. 430-64.000.
Molliex, Jean P.: *See*—
Grossiord, Claude R.; and Molliex, Jean P., 4,484,888, Cl. 431-344.000.
Monsanto Company: *See*—
Hinkebein, John A., 4,484,950, Cl. 106-287.290.
Lannert, Kent P.; Shen, Chung Y.; and Trieu, Dat S., 4,485,049, Cl. 260-465.50R.
Zampini, Anthony, 4,484,935, Cl. 55-158.000.
Monsheimer, Rolf: *See*—
Pfleiderer, Ernst; Taeger, Tilman; and Monsheimer, Rolf, 4,484,924, Cl. 8-94.170.
Moore, Charles C. Tusing circuits with bendable U-shaped variable inductor for garage door actuators. 4,485,382, Cl. 340-825.690.
Moore, Richard P., to Blue Circle Projects (Proprietary) Limited. Rolling seal sluice gate. 4,484,728, Cl. 251-294.000.
Morel, Andre , to Constructions Mecaniques F. LaRoche & Fils. Shredding machine for recycling textile fibers and method. 4,484,377, Cl. 19-82.000.
Moretti, Anthony L.: *See*—
Brockway, Brock F.; Moretti, Anthony L.; Pellolio, Anselmo P.; and Rasmussen, Jimmie, 4,484,575, Cl. 128-201.230.
Morf, Rudolf H.: *See*—
Knop, Karl H.; and Morf, Rudolf H., 4,484,797, Cl. 350-162.190.
Morgan, Gerry H.: *See*—
Minati, Kurt F.; Morgan, Gerry H.; McNerney, Andrew J.; and Schauer, Felix, 4,485,266, Cl. 174-15.0CA.
Mori, Kei. Device for sensing moving light source. 4,484,565, Cl. 126-425.000.
Mori, Shuji: *See*—
Matsuo, Tadao; Mori, Shuji; and Tanaka, Kenzo, 4,485,213, Cl. 525-123.000.
Morimoto, Yoshiro: *See*—
Yamamuro, Sigeaki; Hirano, Hiroyuki; Tanaka, Yoshikazu; and Morimoto, Yoshiro, 4,484,493, Cl. 74-689.000.
Morrison, Richard K.: *See*—
Nettles, William C., Jr.; Morrison, Richard K.; Xie, Zhong-Neng; Ball, Debra; Shenkir, Cyndy A.; and Vinson, S. Bradleigh, 4,484,539, Cl. 119-1.000.
Moseley, Scott A., to Energy Research Corporation. Separator having dielectric elastomer in the periphery area. 4,485,157, Cl. 429-251.000.
Mosley, William H., Jr.: *See*—
Andren, Carl F.; Mosley, William H., Jr.; and Sanders, David E., 4,485,358, Cl. 332-23.00R.
Moss, Ernest K.: *See*—
Frentzel, Richard L.; and Moss, Ernest K., 4,485,194, Cl. 521-129.000.
Moss, James F., to Liberty Glass Company. Bottle carrier. 4,484,774, Cl. 294-87.200.
Motek Laboratories Ltd.: *See*—
Leitner, Frank W.; and Bamberg, James B., 4,484,789, Cl. 339-5.00L.
Motorola, Inc.: *See*—
Davies, Robert B.; Dotson, Robert N.; and Miller, Ira, 4,485,319, Cl. 307-530.000.
Davies, Robert B.; Dotson, Robert N.; and Null, Michael W., 4,485,352, Cl. 330-288.000.
Perkins, Geoffrey W., 4,485,348, Cl. 329-101.000.
Webb, Ronald J.; and Puhl, Larry C., 4,485,486, Cl. 455-33.000.
Welty, Dennis L.; and Zobel, Don W., 4,485,341, Cl. 323-315.000.
Moulin, Maurice; and Vivien, Jean, to Commissariat a l'Energie Atomique. Installation for storing and/or transfer of dangerous products. 4,485,068, Cl. 376-272.000.
Mucheyer, Norbert, to Mannesmann Rexroth GmbH. Load measuring apparatus. 4,484,480, Cl. 73-862.640.
Mueller, Ralph H.: *See*—
Grover, Donald D.; and Mueller, Ralph H., 4,484,469, Cl. 73-119.00A.
Muench, Ernest. Low temperature fail-safe cascade cooling apparatus. 4,484,449, Cl. 62-79.000.
Mugele, Kurt, to Siemens Aktiengesellschaft. Liquid-ring vacuum pump preceded by a precompressor. 4,484,457, Cl. 62-500.000.
Muhlenbeck, Josef: *See*—
Schudlich, Kurt; Vielstich, Gunter; Muhlenbeck, Josef; Otto, Josef; Bauer, Hannsgeorg; Zollner, Dieter H.; and Rittmann, Friedrich, 4,484,897, Cl. 445-67.000.
Muller, Eberhard: *See*—
Musch, Rudiger; Gobel, Wilhelm; Konter, Wolfgang; and Muller, Eberhard, 4,485,216, Cl. 525-215.000.
Muller, Jean N., to Figg and Muller Engineers, Inc. Anchorage of cables. 4,484,425, Cl. 52-223.00R.
Multifastener Corporation: *See*—
Woods, Harold T., 4,484,385, Cl. 29-432.200.
Munsch, James A.: *See*—
Wissink, Ronald L.; and Munsch, James A., 4,484,484, Cl. 74-41.000.
Munshi, Jal F.: *See*—
Armour, Eugene A.; and Munshi, Jal F., 4,485,164, Cl. 430-214.000.
Murakami, Hirokuni: *See*—
Ueda, Yasukiyo; Murakami, Hirokuni; and Iwasa, Takashi, 4,485,296, Cl. 219-505.000.
Murata Manufacturing Co., Ltd.: *See*—
Konoike, Takehiro; and Tamura, Hiroshi, 4,485,180, Cl. 501-135.000.
Sakabe, Yukio, 4,485,181, Cl. 501-136.000.
Yamamoto, Takashi; and Kitajima, Houdo, 4,485,325, Cl. 310-344.000.
Murayama, Junichiro: *See*—
Shida, Yoshiaki; Fujikawa, Hisao; Koike, Masao; Murayama, Junichiro; and Akiyama, Shunichiro, 4,484,956, Cl. 148-12.0EA.
Murayama, Noboru: *See*—
Kamizyo, Eiji; and Murayama, Noboru, 4,485,408, Cl. 358-283.000.
Murayama, Tetsuo: *See*—
Suzuki, Tetsumi; Murayama, Tetsuo; Ono, Hitoshi; and Aramaki, Shinji, 4,485,160, Cl. 430-59.000.
Murguet, Robert F.; and Lugarini-Tardy, Joelle M. J. Flap-type prosthetic heart valve. 4,484,365, Cl. 3-1.500.
Murphy, William A.: *See*—
Coy, David H.; and Murphy, William A., 4,485,101, Cl. 424-177.000.
Murray, David H.: *See*—
Murray, Harley W.; Burnell, Howard P.; and Murray, David H., 4,484,758, Cl. 280-442.000.
Murray, Harley W.; Burnell, Howard P.; and Murray, David H., to Harley Murray, Inc. Self-steering trailer. 4,484,758, Cl. 280-442.000.
Musch, Rudiger; Gobel, Wilhelm; Konter, Wolfgang; and Muller, Eberhard, to Bayer Aktiengesellschaft. Polychloroprene mixtures and the use thereof. 4,485,216, Cl. 525-215.000.
Myrmo, Erik R.; and Wells, Michael F. High transfer rate between multi-processor units. 4,485,438, Cl. 364-200.000.
Nabors, Lester G., to Phillips Petroleum Company. Polyester blends comprising a desiccant and a rubbery block copolymer. 4,485,204, Cl. 524-430.000.
Nachmany, Israel. Machine tool base and carriage system. 4,484,387, Cl. 29-568.000.
Naewae Electric Co., Ltd.: *See*—
Yoo, Kil-Soo, 4,484,573, Cl. 128-138.00A.

Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Matsumoto, Hiroshi; and Kamoshita, Katsuzo, to Sumitomo Chemical Company, Limited. Tetrahydrophthalimides, and their production and use as herbicides. 4,484,940, Cl. 71-96.000.

Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Matsumoto, Hiroshi; and Kamoshita, Katsuzo, to Sumitomo Chemical Company, Limited. Tetrahydrophthalimides, and their production and use as herbicides. 4,484,941, Cl. 71-96.000.

Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Low-value current source circuit. 4,485,313, Cl. 307-296.00R.

Nagasaki, Tatsuo, to Olympus Optical Co., Ltd. Acoustic microscope device. 4,484,476, Cl. 73-606.000.

Nagel, Dietmar: *See—*
Kennedy, Melvin; Nagel, Dietmar; and Arad, Avi, 4,484,649, Cl. 180-216.000.

Nagel, Kennedy, Arad & Associates: *See—*
Kennedy, Melvin; Nagel, Dietmar; and Arad, Avi, 4,484,649, Cl. 180-216.000.

Nakada, Akira; Okamoto, Eisaku; and Yoshida, Kiyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Automatic performance device with tempo follow-up function. 4,484,507, Cl. 84-1.030.

Nakahata, Kimio; Tajima, Hatsuo; Iwami, Naoki; Masuda, Shunichi; Shimizu, Katsuichi; Kawatsura, Yoshihiro; Suzuki, Koji; and Yokomizo, Yoshikazu, to Canon Kabushiki Kaisha. Apparatus for forming an image on a recording member. 4,484,811, Cl. 355-14.0CH.

Nakajima, Sadaaki: *See—*
Fujimura, Isao; Nakajima, Sadaaki; Abe, Morio; and Taniguchi, Masahiko, 4,485,141, Cl. 428-288.000.

Nakajima, Tetsuo; and Irino, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Mixture control apparatus for carburetor. 4,484,554, Cl. 123-339.000.

Nakaminato, Yoshikazu: *See—*
Nishimaki, Toshihiko; Nakaminato, Yoshikazu; and Fujimoto, Katsuhiko, 4,485,476, Cl. 373-2.000.

Nakamura, Kazuharu; and Nakanishi, Yutaka, to Toyotomi Kogyo Co., Ltd. Combustion cylinder construction for oil space heater of the type for radiating heat rays. 4,484,886, Cl. 431-201.000.

Nakamura, Kosei: *See—*
Kawada, Shigeki; Oyama, Shigeaki; Nakamura, Kosei; and Nakano, Jiro, 4,485,320, Cl. 310-217.000.

Nakamura, Moritoshi, to Alps Electric Co., Ltd. Keyboard switch. 4,485,279, Cl. 200-5.00A.

Nakamura, Shigeo: *See—*
Hattori, Masayuki; and Nakamura, Shigeo, 4,485,423, Cl. 361-92.000.

Nakanishi, Yutaka: *See—*
Nakamura, Kazuharu; and Nakanishi, Yutaka, 4,484,886, Cl. 431-201.000.

Nakano, Jiro: *See—*
Kawada, Shigeki; Oyama, Shigeaki; Nakamura, Kosei; and Nakano, Jiro, 4,485,320, Cl. 310-217.000.

Nakano, Kazuyuki: *See—*
Furuzono, Yoshihisa; Kajiwara, Toshiyuki; Kadota, Toshiyuki; Nakano, Kazuyuki; and Tabusi, Kenzi, 4,485,132, Cl. 427-428.000.

Nakano, Shoichi: *See—*
Kuwano, Yukinori; Nakano, Shoichi; Yokoo, Toshiaki; and Shibata, Kenichi, 4,485,305, Cl. 250-338.000.

Nakatani, Hiroshi; and Yamamoto, Hachizou, to Sharp Kabushiki Kaisha. Clerk share calculation in an electronic cash register. 4,485,441, Cl. 364-405.000.

Nakatsuji, Haruo: *See—*
Maegawa, Toshiyuki; and Nakatsuji, Haruo, 4,485,415, Cl. 360-46.000.

Nakayama, Shozo; Inagaki, Mitsukane; Suzuki, Shigeru; and Ban, Takashi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Volumetric fluid compressor. 4,484,869, Cl. 418-55.000.

Nakayama, Takashi; Yamagata, Seiichi; and Kajita, Koji, to Toray Industries, Inc. Process for producing a twisted yarn. 4,484,436, Cl. 57-328.000.

Nakayama, Yasuhiro: *See—*
Takahashi, Yasuo; Fujioka, Takashi; and Nakayama, Yasuhiro, 4,485,170, Cl. 430-627.000.

Namiki, Tomizo: *See—*
Watanabe, Shojiro; Namiki, Tomizo; and Shinozaki, Fumiaki, 4,485,139, Cl. 428-219.000.

Nandlal, Samlal; and McGuire, David P., to Shell Offshore Inc. Method and apparatus for installing anodes on steel platforms at offshore locations. 4,484,839, Cl. 405-211.000.

Nandlal, Samlal; and McGuire, David P., to Shell Offshore Inc. Method and apparatus for installing anodes on steel platforms at offshore locations. 4,484,840, Cl. 405-211.000.

Napadow, Stanley C., to Protectaire Systems Co. Spray booth and method of operating same. 4,484,513, Cl. 98-115.0SB.

Narimatsu, Akihisa, to Sony Magnescale Inc. Magnetic scaling device. 4,484,391, Cl. 33-125.00C.

Narukawa, Sadao: *See—*
Machii, Norihisa; Manago, Atsushi; and Narukawa, Sadao, 4,484,885, Cl. 431-1.000.

Nash, James H., to Service Machine Co. Flame arresting ventilated wall for an explosion-proof enclosure. 4,484,690, Cl. 220-88.00A.

Nash, John E., to Syntex (U.S.A.) Inc. Vibratory endodontic device. 4,484,891, Cl. 433-116.000.

Nath, Dilip K.: *See—*
Williams, Joseph C.; Garmon, Jeff P.; Biswas, Dipak R.; and Nath, Dilip K., 4,485,122, Cl. 427-45.100.

Nath, Prem: *See—*
Izu, Masatsugu; and Nath, Prem, 4,485,264, Cl. 136-244.000.

National Starch and Chemical Corporation: *See—*
Perlmski, Witold; Davis, Irwin J.; and Romanick, John F., 4,485,200, Cl. 523-409.000.

Natsume, Toshio: *See—*
Miura, Hirohisa; Satou, Hiroshi; Natsume, Toshio; and Katagiri, Hidenori, 4,484,943, Cl. 75-0.50B.

NCR Corporation: *See—*
Jones, Robert K.; and van Velthoven, Armand J., 4,485,390, Cl. 357-23.000.
Sayko, Steven P., 4,485,388, Cl. 346-140.00R.
Topich, James A., 4,485,433, Cl. 363-60.000.

Neiditch, David S.; Bullano, Gerald A.; DiLullo, Robert J.; and Ofstein, David E., to Atlantic Richfield Company. Process for the continuous production of star-block copolymers of a monovinyl aromatic monomer and a conjugated diene. 4,485,210, Cl. 525-53.000.

Neti, Radhakrishna M.: *See—*
Harman, John N., III; and Neti, Radhakrishna M., 4,485,001, Cl. 204-408.000.

Netsch, Robert L.: *See—*
McMickle, Robert L.; Rumbaugh, James T.; and Netsch, Robert L., 4,484,586, Cl. 128-786.000.

Nettles, William C., Jr.; Morrison, Richard K.; Xie, Zhong-Neng; Ball, Debra; Shenkir, Cyndy A.; and Vinson, S. Bradleigh, to United States of America, Agriculture. Ovipositional stimulant for trichogramma spp. 4,484,539, Cl. 119-1.000.

Neuhaus, J. D.: *See—*
Reiffert, Werner; Peters, Dieter; and Wiendahl, Joachim, 4,484,598, Cl. 137-613.000.

Neuhaus, Karl-Friedrich: *See—*
Scharf, Hans-Dieter; Frauenrath, Herbert; Heine, Hans-Georg; Rudolph, Hans; Neuhaus, Karl-Friedrich; and Bendszus, Otto, 4,485,249, Cl. 549-347.000.

Neumaier, Hubert: *See—*
Kleiner, Hans-Jerg; and Neumaier, Hubert, 4,485,052, Cl. 260-502.40R.

Neumann, Ulrich: *See—*
Siedel, Joachim; Neumann, Ulrich; Ziegenhorn, Joachim; Batz, Hans-George; Lenz, Helmut; Pautz, Brigitte; and Albert, Winfried, 4,485,177, Cl. 436-547.000.

Nevin, Morris N., to Imperial Chemical Industries PLC. Electrolytic cell. 4,484,998, Cl. 204-257.000.

Newnham, Robert E.: *See—*
Klicker, Kenneth A.; Newnham, Robert E.; Cross, Leslie E.; and Bowen, Leslie J., 4,485,321, Cl. 310-322.000.

NGK Insulators, Ltd.: *See—*
Tsuno, Nobuo, 4,485,150, Cl. 428-633.000.

NGK Spark Plug Co., Ltd.: *See—*
Ushida, Yoshiro, 4,485,369, Cl. 338-34.000.

Niagara Frontier Services: *See—*
Dolce, Augustine J., 4,484,450, Cl. 62-89.000.

Nichias Corporation: *See—*
Yamamoto, Tsutomu; Ashizawa, Masaaki; and Shimoda, Yutaka, 4,485,138, Cl. 428-131.000.

Nickerson, James W. Valve guide and method for making same. 4,484,547, Cl. 123-188.0GC.

Niess, Joseph, to CF Industries, Inc. Ammonia plant refrigeration system and process control method therefor. 4,484,453, Cl. 62-195.000.

NIFCO Inc.: *See—*
Kimura, Shigeru; and Arakawa, Masaru, 4,484,378, Cl. 24-30.50S.

Nihei, Ryo: *See—*
Inaba, Hajimu; Sakakibara, Shinsuke; and Nihei, Ryo, 4,484,855, Cl. 414-736.000.

Nihei, Tetsuo; Maki, Toshio; and Sakuma, Kazuyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Electrical upsetting method and device therefor. 4,484,464, Cl. 72-38.000.

Nihon Nosan Kogyo K.K.: *See—*
Sekimoto, Kunitoshi; Mamiya, Yoneji; and Ishikawa, Tadashi, 4,485,098, Cl. 424-105.000.

Nimon, Susan K.: *See—*
Peterson, Donald W.; and Nimon, Susan K., 4,484,600, Cl. 137-801.000.

Ninagawa, Chikayoshi; Ashizaki, Shigeya; Kimura, Masamichi; and Hosokawa, Atsushi, to Matsushita Electronics Corporation. Monochromatic picture tube. 4,485,328, Cl. 313-466.000.

Ninomiya, Kunihiro: *See—*
Kikumoto, Ryoji; Fukami, Harukazu; Hara, Hiroto; Ninomiya, Kunihiro; and Sugano, Mamoru, 4,485,258, Cl. 562-471.000.

Ninomiya, Yoshito: *See—*
Sekido, Satoshi; Tachibana, Hirokazu; and Ninomiya, Yoshito, 4,485,191, Cl. 502-303.000.

Nippon Colin Co., Ltd.: *See—*
Uemura, Masahiro, 4,484,584, Cl. 128-680.000.

Nippon Electric Co., Ltd.: *See—*
Kobayashi, Satoru, 4,485,461, Cl. 365-239.000.
Takada, Masami, 4,485,478, Cl. 375-60.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Nakada, Akira; Okamoto, Eisaku; and Yoshida, Kiyoshi, 4,484,507, Cl. 84-1.030.

Nippon Kokan Kabushiki Kaisha: *See—*
Nomura, Hirokazu; and Sugitani, Yuji, 4,485,291, Cl. 219-124.220.

Nippon Paint Co., Ltd.: *See—*
Yokoi, Junji; Yamamori, Naoki; and Yoshikawa, Motoyoshi, 4,485,197, Cl. 523-177.000.

Nippon Seiko Kabushiki Kaisha: *See*—
Furumura, Kyozaburo; and Matsunaga, Shigeki, 4,485,024, Cl. 252-62.560.
Higuchi, Seiji; and Chiba, Moichi, 4,484,824, Cl. 384-126.000.
Nippon Soken, Inc.: *See*—
Inagaki, Mitsuo; and Sasaya, Hideaki, 4,484,873, Cl. 418-150.000.
Okamoto, Kunio; and Fukami, Akira, 4,484,938, Cl. 55-269.000.
Yasuda, Etsuo; Akita, Shigeyuki; and Kodera, Masao, 4,485,322, Cl. 310-332.000.
Nippon Stainless Steel Co., Ltd.: *See*—
Shida, Yoshiaki; Fujikawa, Hisao; Koike, Masao; Murayama, Junichiro; and Akiyama, Shunichiro, 4,484,956, Cl. 148-12.0EA.
Nishihata, Ken: *See*—
Katano, Kiyoaki; Atsumi, Kunio; Kai, Fumio; Nishihata, Ken; and Akita, Eiichi, 4,485,235, Cl. 544-021.000.
Nishikawa, Akira; and Okazaki, Shinichi, to Mitsubishi Denki Kabushiki Kaisha. Mobile substation. 4,484,757, Cl. 280-423.00R.
Nishikawa, Shoji: *See*—
Onishi, Masami; Kitamura, Yoshinori; and Nishikawa, Shoji, 4,484,806, Cl. 354-404.000.
Nishimaki, Toshihiko; Nakaminato, Yoshikazu; and Fujimoto, Katsuhiko, to Denki Kagaku Kogyo Kabushiki Kaisha. Apparatus and process for preparing high temperature reaction products. 4,485,476, Cl. 373-2.000.
Nishimura, Ken-ichi: *See*—
Kitao, Kazuhiko; and Nishimura, Ken-ichi, 4,485,033, Cl. 252-315.400.
Nishino, Yoshio; and Kirigaya, Seiichi, to Mitsubishi Kinzoku Kabushiki Kaisha. Process for producing a sintered product of copper-infiltrated iron-base alloy and a two-layer valve seat produced by this process. 4,485,147, Cl. 428-550.000.
Nishizuka, Akihiro: *See*—
Kidena, Masaki; and Nishizuka, Akihiro, 4,485,432, Cl. 363-62.000.
Nissan Motor Company, Limited: *See*—
Hibino, Masahiro, 4,484,497, Cl. 74-859.000.
Oki, Yoshitaka; and Tanuma, Takeshi, 4,484,440, Cl. 60-276.000.
Sugasawa, Fukashi; and Iizuka, Haruhiko, 4,484,548, Cl. 123-198.00F.
Yamamuro, Sigeaki; Hirano, Hiroyuki; Tanaka, Yoshikazu; and Morimoto, Yoshiro, 4,484,493, Cl. 74-689.000.
Yokoyama, Junichi, 4,484,541, Cl. 123-41.100.
Nisshin Steel Co., Ltd.: *See*—
Furuzono, Yoshihisa; Kajiwara, Toshiyuki; Kadota, Toshiyuki; Nakano, Kazuyuki; and Tabusi, Kenzi, 4,485,132, Cl. 427-428.000.
Nitta, Hideo: *See*—
Asano, Hiroshi; Shimamune, Takayuki; Nitta, Hideo; and Hirayama, Ryuta, 4,484,999, Cl. 204-290.00R.
Nitto Electric Industrial Co., Ltd.: *See*—
Otsuka, Saburo; Ito, Yuusuke; Yoshikawa, Toshiyuki; and Tokuda, Shoichi, 4,485,087, Cl. 424-28.000.
Nitto Kagaku Kogyo Kabushiki Kaisha: *See*—
Ashina, Yoshiro; and Fukatsu, Michio, 4,485,261, Cl. 564-479.000.
Niwa, Hideo; and Takahashi, Kozi, to Sanmeidenki Kabushikikaisha. Process and circuit for exciting solenoid coil. 4,485,424, Cl. 361-152.000.
NL Industries, Inc.: *See*—
Kalsi, Manmohan S., 4,484,753, Cl. 277-27.000.
Noble, Robert T., to Texas Instruments Incorporated. Stacked liquid crystal display. 4,485,376, Cl. 340-716.000.
Nobuto, Toru; Hayashi, Aso; Kambara, Koji; Tojiki, Hitomi; and Gocho, Nagahiro, to Olympus Optical Co., Ltd. Colorimetric chemical analyzing apparatus. 4,484,817, Cl. 356-416.000.
Nojima, Masaki: *See*—
Furuta, Haruo; Fujita, Toshiji; Yamada, Chihiko; and Nojima, Masaki, 4,485,413, Cl. 358-334.000.
Noll, Klaus; Pedain, Josef; and Bock, Manfred, to Bayer Aktiengesellschaft. Process for the production of compounds containing isocyanurate groups and olefinic double bonds, the compounds obtainable by this process and their use as binders or binder component in coating compositions. 4,485,226, Cl. 528-45.000.
Nomoto, Reishi; Takahashi, Masayoshi; and Ebata, Yoshikazu, to Janome Sewing Machine Co., Ltd. Suturing instrument for surgical operation. 4,484,580, Cl. 128-340.000.
Nomura, Hirokazu; and Sugitani, Yuji, to Nippon Kokan Kabushiki Kaisha. Method for controlling the position of welding electrode in arc-welding with weaving. 4,485,291, Cl. 219-124.220.
Nomura, Masami, to Mitsubishi Denki Kabushiki Kaisha. Emergency drive device for an A.C. elevator. 4,484,664, Cl. 187-29.00R.
Nomura, Takeshi; Maruyama, Kouji; Ueno, Hiroshi; Inaba, Naomi; and Yoda, Makota, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for producing ethylene polymers. 4,485,187, Cl. 502-134.000.
Nomura, Takeshi: *See*—
Ueno, Hiroshi; Kohara, Tadanao; Nomura, Takeshi; Maruyama, Kouji; Inaba, Naomi; and Yoda, Makota, 4,485,186, Cl. 502-128.000.
Norfleet, Lincoln H. Greeting card. 4,484,768, Cl. 283-1.00B.
Norkus, George E., to United States of America, Army. Adjustable smooth action linkage gripper mechanism. 4,484,775, Cl. 294-88.000.
Norling, Thomas B.; Polkowski, Joseph H.; Poulsen, Jeffrey A.; and Robinson, Daniel E., to GK Technologies, Incorporated. Remotely actuable line disconnect device. 4,485,271, Cl. 179-19.000.
North American Car Corporation: *See*—
Anderson, Arthur I.; and Harvatin, Louis J., 4,484,528, Cl. 105-248.000.
Anderson, Arthur I., 4,484,852, Cl. 414-525.00A.
North American Manufacturing Company: *See*—
Marshall, Robert W., 4,484,947, Cl. 75-65.00R.
North American Philips Consumer Electronics Corp.: *See*—
Donofrio, Robert L.; Rollason, Peter H.; and Fisher, Mahlon B., 4,485,329, Cl. 313-478.000.
North American Philips Corporation: *See*—
Singer, Barry M., 4,485,392, Cl. 357-22.000.
Norz, Wolfgang, to Union Special G.m.b.H. Apparatus for blind stitching an S-shaped hem. 4,484,532, Cl. 112-2.000.
Nossen, Edward J., to RCA Corporation. Fast frequency/code search. 4,485,477, Cl. 375-1.000.
Nourney, Carl-Ernst. Electroacoustic musical instrument with controlled fade-out. 4,484,508, Cl. 84-1.050.
Nowicki, Roman M.: *See*—
Kovacs, Bela V.; Nowicki, Roman M.; and Stickels, Charles A., 4,484,953, Cl. 148-3.000.
Nugent, Fredric J.: *See*—
Mezei, Michael; and Nugent, Fredric J., 4,485,054, Cl. 264-4.600.
Null, Michael W.: *See*—
Davies, Robert B.; Dotson, Robert N.; and Null, Michael W., 4,485,352, Cl. 330-288.000.
Nuzillat, Gerard; Pham Ngu, Tung; and Bert, Georges, to Thomson-CSF. Logic inverter, and a multi-output logic operator derived from this inverter, using at least two low-voltage-threshold field-effect transistors. 4,485,316, Cl. 307-446.000.
Nystrom, Bo R. G.: *See*—
Kristensson, Olle; and Nystrom, Bo R. G., 4,485,057, Cl. 264-45.700.
Obedineni Zavodi Za Zapametyavashti Ustroystva: *See*—
Dyakov, Dobromir A.; Kodjabashev, Petko V.; Stanchev, Pejo; Kirov, Dimiter L.; Zelezov, Jivko J.; Atanassov, Atanas T.; and Yanev, Krestyu N., 4,485,451, Cl. 364-551.000.
Oberdorf, Manfred, to Maschinenfabrik Alfred Schmermund GmbH & Co. Bottom-folding packaging machine. 4,484,432, Cl. 53-575.000.
Ochiai, Kenji; and Sakurai, Tomiyasu, to Asahi Kasei Kogyo Kabushiki Kaisha. High impact polyamide composition. 4,485,214, Cl. 525-179.000.
Odasso, James J.: *See*—
Bongartz, Roy C.; Johnston, Richard H.; Odasso, James J.; and Zaremski, Donald R., 4,484,996, Cl. 204-206.000.
Ofstein, David E.: *See*—
Neiditch, David S.; Bullano, Gerald A.; DiLullo, Robert J.; and Ofstein, David E., 4,485,210, Cl. 525-53.000.
Ogura, Yukio; and Miyajima, Takeshi, to Hitachi Construction Machinery Co., Ltd. Method of measuring contact stress at contacting surfaces of abutting solid masses. 4,484,475, Cl. 73-579.000.
O'Hara, James C., to ACF Industries, Inc. Convertible railway hopper car. 4,484,527, Cl. 105-247.000.
O'Hara, Mark J., to UOP Inc. Hydrocracking with a zeolite in an alumina binder peptized in the presence of a surfactant. 4,485,005, Cl. 208-111.000.
Ohashi, Atsuyoshi: *See*—
Sato, Hidemi; Kaneda, Aizo; Yokono, Hitoshi; Ohashi, Atsuyoshi; Miyake, Kiyohide; Kodama, Toshiro; and Suzuki, Kiichi, 4,484,796, Cl. 350-96.210.
Ohba, Toshihiro: *See*—
Kinoshita, Hiroshi; Ohba, Toshihiro; Kawaguchi, Masashi; Kanatani, Yoshiharu; and Uede, Hisashi, 4,485,379, Cl. 340-781.000.
Ohkawa, Nobuhisa: *See*—
Kobayashi, Nobuyuki; Ito, Hiroshi; and Ohkawa, Nobuhisa, 4,484,552, Cl. 123-339.000.
Ohno, Kazunori: *See*—
Doi, Yoshikazu; Sakai, Yutaka; and Ohno, Kazunori, 4,484,799, Cl. 350-426.000.
Ohta, Shigeto: *See*—
Watanabe, Katsunori; Ohta, Shigeto; Sakai, Kiyoshi; Ishikawa, Shozo; and Kitahara, Makoto, 4,485,159, Cl. 430-58.000.
Ohtomo, Fumio; and Kimura, Kazuaki, to Tokyo Kogaku Kikai K.K. Apparatus for measuring length or angle. 4,484,816, Cl. 356-372.000.
Ohtsu, Takaji: *See*—
Soneda, Mitsuo; Ohtsu, Takaji; and Kutaragi, Ken, 4,485,380, Cl. 340-784.000.
Ohtsuka, Sadao; Komatsu, Toshio; Kosdoh, Yukio; and Takahashi, Hideyuki, to Mitsubishi Gas Chemical Company, Inc. Oxygen absorbent packaging. 4,485,133, Cl. 428-35.000.
Ohtsuki, Akira, to Omphale S.A. Globoid-worm machine with tapered screw clearance near high pressure end seal. 4,484,872, Cl. 418-140.000.
Okami, Takehide: *See*—
Inoue, Yoshio; and Okami, Takehide, 4,485,206, Cl. 524-719.000.
Okamoto, Eisaku: *See*—
Nakada, Akira; Okamoto, Eisaku; and Yoshida, Kiyoshi, 4,484,507, Cl. 84-1.030.
Okamoto, Kunio; and Fukami, Akira, to Nippon Soken, Inc. Total heat exchanger. 4,484,938, Cl. 55-269.000.
Okamoto, Yoshihisa, to B. F. Goodrich Company, The. Poly(glycidyl ether)block copolymers and process for their preparation. 4,485,211, Cl. 525-57.000.
Okawa, Masahisa: *See*—
Shiga, Akinobu; Fukui, Yoshiharu; Sasaki, Toshio; Okawa, Masahisa; and Matsuura, Hideaki, 4,485,035, Cl. 502-115.000.
Okawachi, Toshio, to Mitsubishi Jukogyo Kabushiki Kaisha. Tire vulcanizing press. 4,484,874, Cl. 425-47.000.

Okazaki, Shinichi: *See*—
Nishikawa, Akira; and Okazaki, Shinichi, 4,484,757, Cl. 280-423.00R.

Oki, Yoshitaka; and Tanuma, Takeshi, to Nissan Motor Company, Limited. Exhaust manifold of dual type formed with chamber to receive exhaust gas sensor. 4,484,440, Cl. 60-276.000.

Okimoto, Haruo; and Matsuda, Ikuo, to Toyo Kogyo Co., Ltd. Supercharge control means for an internal combustion engine. 4,484,556, Cl. 123-432.000.

Okushita, Masataka, to Dai Nippon Insatsu Kabushiki Kaisha. Apparatus for erecting, filling and sealing bag-in-box packages. 4,484,431, Cl. 53-170.000.

Okuyama, Teiji: *See*—
Yamada, Takahiro; and Okuyama, Teiji, 4,485,371, Cl. 340-52.00R.

Olsen, Bill R. Container for self developing film and prints. 4,484,680, Cl. 206-455.000.

Olson, Maynard H.: *See*—
Bultman, David A.; and Olson, Maynard H., 4,484,990, Cl. 204-106.000.

Olsson, Nils A.: *See*—
Tang, Chung L.; Olsson, Nils A.; and Halbout, Jean-Marc, 4,485,473, Cl. 372-18.000.

Olstowski, Franciszek; and Peffley, Richard D., to Dow Chemical Company, The. Compatible mixtures of aminated polyether polyols and low molecular weight glycols. 4,485,031, Cl. 252-182.000.

Olstowski, Franciszek; and Peffley, Richard D., to Dow Chemical Company, The. Compatible polyol biends. 4,485,032, Cl. 252-182.000.

Olympus Optical Co., Ltd.: *See*—
Kikuchi, Juro, 4,484,802, Cl. 350-469.000.
Nagasaki, Tatsuo, 4,484,476, Cl. 73-606.000.
Nobuto, Toru; Hayashi, Asao; Kambara, Koji; Tojiki, Hitomi; and Gocho, Nagahiro, 4,484,817, Cl. 356-416.000.
Sato, Masaaki, 4,485,276, Cl. 179-157.000.

Omley, Herbert A. Method and tool for expanding a resilient ring for sliding over and positioning on a penis for anchoring a resilient catheter thereto. 4,484,918, Cl. 604-349.000.

Omniart Distributions Inc.: *See*—
Despins, Maurice, 4,484,976, Cl. 156-578.000.

Omphale S.A.: *See*—
Ohtsuki, Akira, 4,484,872, Cl. 418-140.000.

Omron Tateisi Electronics Co.: *See*—
Matsui, Kenji; and Watanabe, Masakatu, 4,485,378, Cl. 340-750.000.

Onishi, Masami; Kitamura, Yoshinori; and Nishikawa, Shoji, to Matsushita Electric Industrial Co., Ltd. Automatic focussing apparatus. 4,484,806, Cl. 354-404.000.

Ono, Hitoshi: *See*—
Suzuki, Tetsumi; Murayama, Tetsuo; Ono, Hitoshi; and Aramaki, Shinji, 4,485,160, Cl. 430-59.000.

Onodera, Tamio; Sakai, Tokuji; Yamasaki, Yasuo; and Sumitani, Koji, to Teijin Petrochemical Industries, Ltd. Catalyst composition. 4,485,185, Cl. 502-71.000.

Orain, Michel A., to Glaenzer Spicer. Articulated transmission joint including rollers. 4,484,900, Cl. 464-111.000.

Organon Teknika Corporation: *See*—
Hanover, Barry K.; and Jacobsen, Stephen C., 4,484,599, Cl. 137-636.100.

Ortho Pharmaceutical Corporation: *See*—
Csontos, Steve L.; and Chamberlain, Charles L., 4,485,009, Cl. 209-37.000.

Osaka Gas Company Ltd.: *See*—
Machii, Norihisa; Manago, Atsushi; and Narukawa, Sadao, 4,484,885, Cl. 431-1.000.

Osborne, Louis S.; and Lanza, Richard C., to Massachusetts Institute of Technology. Medical gamma ray imaging. 4,485,307, Cl. 250-385.000.

Osborne, Neal F., to Beecham Group Limited. β-Lactam compounds, and use. 4,485,110, Cl. 424-270.000.

Osburg, Dieter; and Voss, Peter, to Jagenberg AG. Device for stacking sheets of paper. 4,484,736, Cl. 271-220.000.

Oshio, Hiromichi: *See*—
Kirino, Osamu; Hashimoto, Shunichi; Matsumoto, Hiroshi; and Oshio, Hiromichi, 4,484,942, Cl. 71-118.000.

Ostertag, Karl: *See*—
Vleggaar, Jan; Ostertag, Karl; and Schneider, Klaus, 4,484,624, Cl. 165-172.000.

Osterwalder, Johann M., to General Dynamics/Electronics. Injection laser modulator with external resonator. 4,485,474, Cl. 372-28.000.

Ota, Shozo: *See*—
Watanabe, Yoshikazu; Tsukahara, Toshihide; and Ota, Shozo, 4,484,967, Cl. 156-151.000.

Otisca Industries, Inc.: *See*—
Keller, Douglas V., Jr., 4,484,928, Cl. 44-1.0SR.

Ototani, Tohei, to Metal Research Corporation. Method of producing iron-, nickle-, or cobalt-base alloy with low contents of oxygen, sulphur, and nitrogen. 4,484,946, Cl. 75-58.000.

Otsuka, Saburo; Ito, Yuusuke; Yoshikawa, Toshiyuki; and Tokuda, Shoichi, to Nitto Electric Industrial Co., Ltd. Process for obtaining composite pharmaceutical preparation. 4,485,087, Cl. 424-28.000.

Ott, Anton: *See*—
Knodler, Dietrich; Boes, Werner; Ott, Anton; and Venger, Kurt O., 4,485,443, Cl. 364-424.100.

Ott, Johann, to Hilti Aktiengesellschaft. Expansion dowel assembly. 4,484,848, Cl. 411-24.000.

Otto, Josef: *See*—
Schudlich, Kurt; Vielstich, Gunter; Muhlenbeck, Josef; Otto, Josef; Bauer, Hannsgeorg; Zollner, Dieter H.; and Rittmann, Friedrich, 4,484,897, Cl. 445-67.000.

Ovshinsky, Herbert C.: *See*—
Izu, Masatsugu; and Ovshinsky, Herbert C., 4,485,125, Cl. 427-74.000.

Ovshinsky, Stanford R.; and Izu, Masatsugu, to Energy Conversion Devices, Inc. Amorphous semiconductors equivalent to crystalline semiconductors. 4,485,389, Cl. 357-2.000.

Owens-Corning Fiberglas Corporation: *See*—
Harrington, Edward R.; Uffner, William E.; and Janicki, Richard T., 4,485,142, Cl. 428-290.000.
Harrington, Edward R.; Uffner, William E.; and Janicki, Richard T., 4,485,145, Cl. 428-378.000.
Uffner, William E.; and White, Robert N., 4,485,144, Cl. 428-343.000.

OY Nokia AB: *See*—
Suominen, Olli, 4,485,482, Cl. 372-70.000.

OY Tampella AB: *See*—
Majaniemi, Pekka, 4,484,982, Cl. 162-358.000.

Oyama, Shigeaki: *See*—
Kawada, Shigeki; Oyama, Shigeaki; Nakamura, Kosei; and Nakano, Jiro, 4,485,320, Cl. 310-217.000.

Ozaki, Minoru; and Tanaka, Kunimaro, to Mitsubishi Denki Kabushiki Kaisha. PCM Recording and reproducing device. 4,485,417, Cl. 360-73.000.

Ozawa, Chiaki: *See*—
Kawaida, Shinji; and Ozawa, Chiaki, 4,484,973, Cl. 156-400.000.

Pagel, Wayne H., to Hydraulic Services Inc. Rotary vane pump with undervane pumping and an auxiliary outlet. 4,484,863, Cl. 417-204.000.

Pakulis, Ivars E., to Advanced Moisture Technology, Inc. Apparatus and process for microwave moisture analysis. 4,485,284, Cl. 219-10.55R.

Palensky, Frederick J.: *See*—
Rasmussen, Jerald K.; Heilmann, Steven M.; and Palensky, Frederick J., 4,485,236, Cl. 544-69.000.

Palermo, Michael A.; and Mason, James L. Wall mounted housing for cable television components. 4,484,692, Cl. 220-346.000.

Palmer, James L.: *See*—
Hettinger, William P., Jr.; Beck, H. Wayne; Carruthers, James D.; Cornelius, Edward B.; Kovach, Stephen M.; and Palmer, James L., 4,485,184, Cl. 502-67.000.

Parekh, Girish G., to American Cyanamid Company. Thermosetting polyurethane compositions. 4,485,222, Cl. 525-517.000.

Parekh, Girish G.: *See*—
Jacobs, William, III; Parekh, Girish G.; and Blank, Werner J., 4,484,994, Cl. 204-181.00C.

Parker Metal Corporation: *See*—
Consiglio, Peter A., Jr., 4,484,681, Cl. 206-499.000.

Parks, Gary P.; and Wade, Jack H., to Hosiery Manufacturing Corp. of Morganton. Dye machine with capacity decreasing insert. 4,484,461, Cl. 68-142.000.

Parry, Richard J.: *See*—
Potter, William D.; Barclay, Andrew C.; Dunning, Reginald; and Parry, Richard J., 4,484,949, Cl. 106-85.000.

Pasarela, Nunzio R., to American Cyanamid Company. Controlled release acrylic polymer coated granular pesticidal compositions with attendant reduced dermal toxicity. 4,485,103, Cl. 424-202.000.

Pask, George; Sadler, John H. R.; and Coplin, John F., to Rolls-Royce Limited. Rotor blade for a gas turbine engine. 4,484,859, Cl. 416-96.00A.

Patacca, Angelo M., to United Technologies Corporation. Containment structure. 4,484,856, Cl. 415-9.000.

Patel, Baboobhai S.: *See*—
Angelo, Arthur L.; Patel, Baboobhai S.; and Bui, Duc T., 4,484,991, Cl. 204-129.000.

Patin, Pierre. Bladed turbine pump with adjustable guide vanes. 4,484,857, Cl. 415-146.000.

Patrick, James H.: *See*—
Plumridge, Robert W.; and Patrick, James H., 4,484,676, Cl. 198-718.000.

Patzold, Dieter; Schreiber, Alfons; and Tiwi, Peter, to ITT Industries, Inc. Floor-sweeping machine. 4,484,371, Cl. 15-41.00R.

Patzold, Dieter; Schreiber, Alfons; and Tiwi, Peter, to ITT Industries, Inc. Floor-sweeping machine. 4,484,372, Cl. 15-42.000.

Paul Mueller Company: *See*—
Rowe, David W.; and Waynick, William R., 4,484,623, Cl. 165-164.000.

Pautz, Brigitte: *See*—
Siedel, Joachim; Neumann, Ulrich; Ziegenhorn, Joachim; Batz, Hans-George; Lenz, Helmut; Pautz, Brigitte; and Albert, Winfried, 4,485,177, Cl. 436-547.000.

Pauze, Denis R., to General Electric Company. Enamel having improved coatability and insulated electrical articles produced therefrom. 4,485,127, Cl. 427-120.000.

Pavkovich, John M.: *See*—
Siegel, Larry E.; Pavkovich, John M.; and Jahn, George E., 4,485,349, Cl. 330-3.000.

Pebler, Alfred R.; and Charles, Robert G., to Westinghouse Electric Corp. Method of making ABO_3 of the cubic perovskite structure. 4,485,094, Cl. 427-87.000.

Pedain, Josef: *See*—
Noll, Klaus; Pedain, Josef; and Bock, Manfred, 4,485,226, Cl. 528-45.000.

Peet, Norton P.; and Sunder, Shyam, to Dow Chemical Company, The. Substituted tetrahydrotetrazolo[5,1-a]phthalazines. 4,485,106, Cl. 424-250.000.

Peffley, Richard D.: *See*—
Olstowski, Franciszek; and Peffley, Richard D., 4,485,031, Cl. 252-182.000.
Olstowski, Franciszek; and Peffley, Richard D., 4,485,032, Cl. 252-182.000.
Peirce, Roger, to Visa U.S.A., Inc. Loss control system. 4,485,300, Cl. 235-380.000.
Pellolio, Anselmo P.: *See*—
Brockway, Brock F.; Moretti, Anthony L.; Pellolio, Anselmo P.; and Rasmussen, Jimmie, 4,484,575, Cl. 128-201.230.
Pennella, Andrew J., Jr.; Benjamin, Lawrence S.; Bergman, Adolph G.; and Jahnke, William R., to Textron, Inc. Machine tool safety shield. 4,484,845, Cl. 409-134.000.
Pennwalt Corporation: *See*—
Adams, Richard G.; Goltz, Kurt; and Spaeth, Frederick J., 4,485,131, Cl. 427-388.200.
Perkin-Elmer Corporation, The: *See*—
Trost, David, 4,485,339, Cl. 318-640.000.
Perkins, Geoffrey W., to Motorola, Inc. Full wave envelope detector using clarrent mirrors. 4,485,348, Cl. 329-101.000.
Perkins, Thomas K., to Atlantic Richfield Company. Well completion for electrical power transmission. 4,484,627, Cl. 166-248.000.
Perlinski, Witold; Davis, Irwin J.; and Romanick, John F., to National Starch and Chemical Corporation. Neoprene latex contact adhesives. 4,485,200, Cl. 523-409.000.
Permelec Electrode Ltd.: *See*—
Asano, Hiroshi; Shimamune, Takayuki; Nitta, Hideo; and Hirayama, Ryuta, 4,484,999, Cl. 204-290.00R.
Pernot, Jacques; and Lacour, Bernard, to Micro-Mega S.A. Hand-held pneumatic implement for removing dental scale. 4,484,892, Cl. 433-118.000.
Pestellini, Vittorio; Ghelardoni, Mario; Maggi, Carlo Alberto; Roncucci, Gabrio; and Meli, Alberto, to A. Menarini S.A.S. N-[(Benzofuran-2-yl)(phenyl)methyl]-alkylene diamines useful in treating arrhythmic, histaminic and tussive conditions. 4,485,112, Cl. 424-285.000.
Peters, Dieter: *See*—
Reiffert, Werner; Peters, Dieter; and Wiendahl, Joachim, 4,484,598, Cl. 137-613.000.
Peterson, Donald W.; and Nimon, Susan K., to Streamway Corporation. Swivel spout construction for a faucet. 4,484,600, Cl. 137-801.000.
Peterson, Michael: *See*—
Ferdinand, Irwin J.; Sylvan, Richard; and Peterson, Michael, 4,484,608, Cl. 144-134.00B.
Petersson, Nils A. I., to Brio Toy AB. Connection element for assembling toys. 4,484,407, Cl. 446-122.000.
Pettersson, Sune O , to AB Allterm. Device in burners. 4,484,887, Cl. 431-265.000.
Peuker, Karl, to FAG Kugelfischer Georg Schaafer & Co. Method of determining the boiling point of a liquid. 4,484,823, Cl. 374-27.000.
Pfizer Inc.: *See*—
Walinsky, Stanley W., 4,485,223, Cl. 526-80.000.
Pfleiderer, Ernst; Taeger, Tilman; and Monsheimer, Rolf, to Rohm GmbH. Process for producing unhaired, storable hides and skins. 4,484,924, Cl. 8-94.170.
Pham Ngu, Tung: *See*—
Nuzillat, Gerard; Pham Ngu, Tung; and Bert, Georges, 4,485,316, Cl. 307-446.000.
Phelps, Kelsey L. Flotation chair. 4,484,781, Cl. 297-452.000.
Philips Kommunikations Industrie AG: *See*—
Schemmel, Hans R.; and Reichelt, Ingo, 4,485,351, Cl. 330-288.000.
Phillips Petroleum Company: *See*—
Funk, Gary L.; and Bland, Terry E., 4,485,070, Cl. 422-62.000.
Hopkins, Thomas R., 4,485,016, Cl. 210-632.000.
Nabors, Lester G., 4,485,204, Cl. 524-430.000.
Shay, Lucas K.; and Reiter, Stephen E., 4,485,020, Cl. 252-8.55D.
Spence, J. Ronald, 4,485,022, Cl. 252-32.70E.
Yu, Michael C., 4,485,230, Cl. 528-125.000.
Phoenix Medical Corporation: *See*—
Rosenberg, David B., 4,485,294, Cl. 219-216.000.
Piccolo, Dominic J.: *See*—
Carroll, Thomas J.; Feinerman, Deborah; Huzinec, Robert J.; and Piccolo, Dominic J., 4,485,118, Cl. 426-5.000.
Pietro Laverda S.p.A.: *See*—
Raineri, Giuseppe, 4,484,587, Cl. 130-27.00T.
Pilny, James C.: *See*—
Tengler, John N.; and Pilny, James C., 4,484,792, Cl. 339-143.00R.
Piltz, Lars E.: *See*—
Quist, Bo T.; Jeppsson, Jan B.; and Piltz, Lars E., 4,484,968, Cl. 156-160.000.
Pim, Kendall A.: *See*—
Berlincourt, Don A.; Pim, Kendall A.; and Randles, Joseph L., 4,485,324, Cl. 310-339.000.
Piot, Michel: *See*—
Roger, Loic; Maubois, Jean-Louis; Brule, Gerard; and Piot, Michel, 4,485,040, Cl. 260-122.000.
Pirich, Ronald G.; and Larson, David J., Jr., to Grumman Aerospace Corporation. Thermally controlled sputtering of high anisotropy magnetic material. 4,484,995, Cl. 204-192.00M.
Pitts, Warren R., to Dennison Manufacturing Company. Inserts for transparent identification tabs. 4,484,401, Cl. 40-2.00R.
Plasma Physics Corporation: *See*—
Coleman, John H., 4,484,809, Cl. 355-3.0DR.
Plener, Joachim: *See*—
Wendel, Nikolaus; and Plener, Joachim, 4,484,544, Cl. 123-90.300.
PLM Aktiebolag: *See*—
Jacobsen, Kjell M., 4,485,134, Cl. 428-35.000.
Plumridge, Robert W.; and Patrick, James H., to Centri-Spray Corporation. Accumulating shuttle conveyor. 4,484,676, Cl. 198-718.000.
Poenisch, Richard B., to Atlantic Richfield Company. Process for the recovery of molybdenum from organic solutions. 4,485,074, Cl. 423-55.000.
Poisel, C. Edward, to AT&T Technologies, Inc. Thin film bar resistor. 4,485,370, Cl. 338-309.000.
Polaroid Corporation: *See*—
Keith, Laura E., 4,484,808, Cl. 354-433.000.
Polizzotto, Giovanni, to Iselfa S.r.l. System for the suspension of the conductors of a bundle in very high voltage electric lines. 4,485,267, Cl. 174-43.000.
Polkowski, Joseph H.: *See*—
Norling, Thomas B.; Polkowski, Joseph H.; Poulsen, Jeffrey A.; and Robinson, Daniel E., 4,485,271, Cl. 179-19.000.
Pontbriand, Pierre: *See*—
L'Homme, Louis; Pontbriand, Pierre; and Guichard, Georges, 4,484,788, Cl. 312-320.000.
Porter, Samuel, Jr.: *See*—
Chang, Wen-Hsuan; Ambrose, Ronald R.; McKeough, David T.; Porter, Samuel, Jr.; and Johnston, Byron K., 4,485,228, Cl. 528-84.000.
Potocnik, Joze: *See*—
Kogej, Boris; and Potocnik, Joze, 4,484,389, Cl. 29-597.000.
Potter, James M.: *See*—
Swenson, Donald A.; Boyd, Thomas J., Jr.; Potter, James M.; and Stovall, James E., 4,485,346, Cl. 328-233.000.
Potter, William D.; Barclay, Andrew C.; Dunning, Reginald; and Parry, Richard J., to Smith & Nephew Research Limited. Cement compositions. 4,484,949, Cl. 106-85.000.
Poulain, Pierre; de Cremoux, Baudouin; and Hirtz, Pierre, to Thomson-CSF. Light emitting and receiving transistor for operation in alternate sequence in an optical-fiber telecommunications systems. 4,485,391, Cl. 357-19.000.
Poulsen, Jeffrey A.: *See*—
Norling, Thomas B.; Polkowski, Joseph H.; Poulsen, Jeffrey A.; and Robinson, Daniel E., 4,485,271, Cl. 179-19.000.
PPG Industries, Inc.: *See*—
Chang, Wen-Hsuan; Ambrose, Ronald R.; McKeough, David T.; Porter, Samuel, Jr.; and Johnston, Byron K., 4,485,228, Cl. 528-84.000.
Jerabek, Robert D.; Koren, Jeffrey G.; and Johnson, Mark W., 4,485,259, Cl. 564-292.000.
Mansell, John D., 4,484,989, Cl. 204-59.00R.
President and Fellows of Harvard College: *See*—
Gordon, Roy G.; and Kurtz, Sarah, 4,485,265, Cl. 136-255.000.
Price, Barry J.: *See*—
Clitherow, John W.; Price, Barry J.; Hayes, Roger; and Bays, David E., 4,485,104, Cl. 424-246.000.
Price, John G. Sweeper bristle element. 4,484,373, Cl. 15-159.00A.
Price, Lewis C., Jr., to Dennison Manufacturing Company. Ink cartridge. 4,484,827, Cl. 401-205.000.
Price, William M. Electric gear drive nutcracker. 4,485,119, Cl. 426-482.000.
Protectaire Systems Co.: *See*—
Napadow, Stanley C., 4,484,513, Cl. 98-115.0SB.
Proter S.p.A.: *See*—
Dall'Asta, Leone, 4,485,248, Cl. 544-325.000.
Puhl, Larry C.: *See*—
Webb, Ronald J.; and Puhl, Larry C., 4,485,486, Cl. 455-33.000.
Purcell, Robert F.; and Kayser, Robert B., to Angus Chemical Company. Water flooding process for recovering petroleum. 4,485,021, Cl. 252-8.55D.
Puzey, Brian S. W., to Black Clawson Company, The. Beam mounted core enveloper. 4,484,714, Cl. 242-56.00A.
Quaker Oats Company, The: *See*—
Gantwerker, Scott; and Leong, Sai, 4,485,120, Cl. 426-625.000.
Quarella, Guido: *See*—
Steiniger, Wolfgang; Bardenhagen, Dietrich; and Quarella, Guido, 4,484,589, Cl. 131-110.000.
Quinoderm Limited: *See*—
Fitton, Harry, 4,485,091, Cl. 424-62.000.
Quist, Bo T.; Jeppsson, Jan B.; and Piltz, Lars E., to AB Akerlund & Rausing. Method and apparatus for covering flexible symmetrical angulate tubes with sheet material. 4,484,968, Cl. 156-160.000.
Rabatin, Jacob G., to General Electric Company. Photo detection system. 4,485,308, Cl. 250-461.100.
Rach, Lester G. Remote control hitch. 4,484,760, Cl. 280-477.000.
Radkevich, Alexei V.: *See*—
Apilat, Vitaly Y.; Goriletsky, Valentin I.; Maximov, Vladimir G.; Mjulendorf, Oleg S.; Radkevich, Alexei V.; Chernitsky, Leonid D.; Eidelman, Lev G.; Vakulenko, Viktor Y., deceased; and Vakulenko, Raisa P., administrator, 4,485,072, Cl. 422-249.000.
Radyne Limited: *See*—
Fowler, Arthur J., 4,484,904, Cl. 493-213.000.
Raible, Donald A., to Bentley Laboratories. Atraumatic blood access device sealing mechanism. 4,484,912, Cl. 604-175.000.
Raineri, Giuseppe, to Pietro Laverda S.p.A. Axial-flow thresher-separator unit for combine harvesters. 4,484,587, Cl. 130-27.00T.
Ralchev, Vesselin L.: *See*—
Dimitrov, Issay M.; Boychev, Atanas P.; Ralchev, Vesselin L.; and Kostov, Georgi Y., 4,484,730, Cl. 266-201.000.
Ralston, Margarete A., to RCA Corporation. Broadband diamond-shaped antenna. 4,485,385, Cl. 343-795.000.

Ralston Purina Company: *See*—
Werner, August C., Jr., 4,484,683, Cl. 206-624.000.
Ramcke, Bernd, to E.C.H. Will (GmbH & Co.). Apparatus for cutting and trimming paper sheets or the like. 4,484,501, Cl. 83-255.000.
Randall, Anthony W.: *See*—
Hudson, Alan T.; and Randall, Anthony W., 4,485,116, Cl. 424-331.000.
Hudson, Alan T.; and Randall, Anthony W., 4,485,117, Cl. 424-331.000.
Randles, Joseph L.: *See*—
Berlincourt, Don A.; Pim, Kendall A.; and Randles, Joseph L., 4,485,324, Cl. 310-339.000.
Ransburg Corporation: *See*—
Woodruff, Frederick W.; and Hughey, Daniel C., 4,485,427, Cl. 361-235.000.
Rashid, James M.; Friedrich, Leonard A.; and Freling, Melvin, to United Technologies Corporation. Chromium boron surfaced nickel-iron base alloys. 4,485,148, Cl. 428-610.000.
Rasmussen, Jerald K.; Heilmann, Steven M.; and Palensky, Frederick J., to Minnesota Mining and Manufacturing Company. Azlactone-functional compounds. 4,485,236, Cl. 544-69.000.
Rasmussen, Jimmie: *See*—
Brockway, Brock F.; Moretti, Anthony L.; Pellolio, Anselmo P.; and Rasmussen, Jimmie, 4,484,575, Cl. 128-201.230.
Raveh, Joram: *See*—
Sutter, Franz; Straumann, Fritz; and Raveh, Joram, 4,484,570, Cl. 128-92.00D.
Raychem Corporation: *See*—
Grassauer, Willie K.; and Robinson, William M., 4,484,704, Cl. 228-180.00A.
Raychem GmbH: *See*—
Steinberg, Norman R., 4,485,269, Cl. 174-84.00R.
RCA Corporation: *See*—
Fang, Ta-Fang; Wittmann, Erwin J.; Harwood, Leopold A.; and Craft, Jack, 4,485,353, Cl. 331-8.000.
Harper, Stanley A., 4,485,158, Cl. 430-28.000.
Kirschner, Thomas F., 4,485,465, Cl. 369-77.200.
Knop, Karl H.; and Morf, Rudolf H., 4,484,797, Cl. 350-162.190.
Nossen, Edward J., 4,485,477, Cl. 375-1.000.
Ralston, Margarete A., 4,485,385, Cl. 343-795.000.
Shanley, Robert L., II; and Harwood, Leopold A., 4,485,354, Cl. 331-8.000.
Tults, Juri, 4,485,404, Cl. 358-195.100.
Warren, Henry R., 4,485,395, Cl. 358-17.000.
Reali, Peter A., to Rolm Corporation. Data line interface for a time-division multiplexing (TDM) bus. 4,485,470, Cl. 370-100.000.
Reba, Imants; Schutz, Rudolph W.; and Kozbur, Nestor, to Crown Zellerbach Corporation. Web slitting and grooving system. 4,484,500, Cl. 83-98.000.
Reber, Jean F.: *See*—
Buhler, Niklaus; Reber, Jean F.; Meier, Kurt; and Rusek, Milos, 4,484,992, Cl. 204-157.10R.
Reddy, P. S.: *See*—
Meno, Frank; and Reddy, P. S., 4,484,579, Cl. 128-305.000.
Redi, Vittorio. Fasteners for jewelry and the like. 4,484,380, Cl. 24-240.000.
Regen, Steven L., to Research Corporation. Synthetic phosphatidyl cholines useful in forming liposomes. 4,485,045, Cl. 260-403.000.
Regie Nationale des Usines Renault: *See*—
Boutant, Jean-Jacques, 4,484,489, Cl. 74-473.00R.
Regneth, Lorenz: *See*—
Fegley, Charles R.; Regneth, Lorenz; and Tamashasky, Joseph A., 4,485,290, Cl. 219-85.0CA.
Reich, Shymon; and Vofsi, David, to Yeda Research & Development Company, Ltd. Lap for the polishing of gemstones. 4,484,418, Cl. 51-283.00R.
Reichelt, Ingo: *See*—
Schemmel, Hans R.; and Reichelt, Ingo, 4,485,351, Cl. 330-288.000.
Reiffert, Werner; Peters, Dieter; and Wiendahl, Joachim, to Neuhaus, J. D. Pneumatic control apparatus. 4,484,598, Cl. 137-613.000.
Reimann, Robert C., to United States of America, Energy. Triple loop heat exchanger for an absorption refrigeration system. 4,484,456, Cl. 62-476.000.
Reinshagen, Hellmuth: *See*—
Avar, Lajos; Kalt, Evelyne; and Reinshagen, Hellmuth, 4,485,034, Cl. 252-403.000.
Reiter, Stephen E.: *See*—
Shay, Lucas K.; and Reiter, Stephen E., 4,485,020, Cl. 252-8.55D.
Remick, Robert J.; and Ang, Peter G. P., to Institute of Gas Technology. Electrically rechargeable anionically active reduction-oxidation electrical storage-supply system. 4,485,154, Cl. 429-14.000.
Research Corporation: *See*—
Regen, Steven L., 4,485,045, Cl. 260-403.000.
Research Foundation, State University of New York: *See*—
Homan, Clarke G.; Scholz, Wilfried W.; Standish, William J.; and Leiberich, Andreas, 4,485,152, Cl. 428-670.000.
Ressorts Industrie: *See*—
Duchemin, Michel, 4,484,706, Cl. 238-349.000.
Reuteman, Harry J.; Lampley, Howard B.; and McElroy, Dale E., to Slush Puppie Corporation. Ice cream cone dispenser. 4,484,694, Cl. 221-197.000.
Rhone-Poulenc Chimie de Base: *See*—
Jenck, Jean, 4,485,255, Cl. 560-193.000.
Rhone-Poulenc Specialites Chemiques: *See*—
Bauer, Denise; Fourre, Patrick; and Sabot, Jean-Louis, 4,485,076, Cl. 423-112.000.
Rhone-Poulenc Specialites Chimiques: *See*—
Dupin, Thierry, 4,485,189, Cl. 502-217.000.
Ribka, Joachim: *See*—
Armbrecht, Norbert; Bauer, Wolfgang; and Ribka, Joachim, 4,485,042, Cl. 534-796.000.
Richard Wolf GmbH: *See*—
Baier, Manfred, 4,484,585, Cl. 128-748.000.
Richardson, Alfred G.: *See*—
Anctil, Stephen N.; Gleason, Robert F.; Hadfield, Don A.; Logan, John S. B., Jr.; and Richardson, Alfred G., 4,484,963, Cl. 156-56.000.
Richardson, Ryden L.: *See*—
Miller, Richard B.; and Richardson, Ryden L., 4,485,183, Cl. 502-25.000.
Richmond, James M.; and Stanley, Keith D., to Akzona Incorporated. Ethoxylated quaternary benzyl compounds. 4,485,048, Cl. 260-462.00R.
Richmond Metal Finishers, Inc.: *See*—
Robinson, W. W., 4,484,988, Cl. 204-35.100.
Ricoh Company, Ltd.: *See*—
Kamizyo, Eiji; and Murayama, Noboru, 4,485,408, Cl. 358-283.000.
Matsuhisa, Koh, 4,484,485, Cl. 74-89.220.
Ridlen, James R.: *See*—
Bell, Gordon M.; and Ridlen, James R., 4,485,218, Cl. 525-257.000.
Riegger, Wolfgang; and Chlosta, Wolfgang, to Bodenseewerk Perkin-Elmer & Co., GmbH. Needle assembly useful in the head-space method of gas chromatography. 4,484,483, Cl. 73-864.230.
Riffaud, Jean-Pierre: *See*—
Lemoine, Jean; and Riffaud, Jean-Pierre, 4,485,111, Cl. 424-285.000.
Risenwald, Peter: *See*—
Atlas, Sheldon M., 4,484,926, Cl. 8-115.500.
Rittmann, Friedrich: *See*—
Schudlich, Kurt; Vielstich, Gunter; Muhlenbeck, Josef; Otto, Josef; Bauer, Hannageorg; Zollner, Dieter H.; and Rittmann, Friedrich, 4,484,897, Cl. 445-67.000.
Riverside Research Institute: *See*—
Driller, Jack; Henriksen, William G.; Coleman, D. Jackson; and Lizzi, Frederic L., 4,484,569, Cl. 128-660.000.
Robbins, Richard D.: *See*—
Sohn, Norman; Weinstein, Michael A.; and Robbins, Richard D., 4,484,919, Cl. 604-358.000.
Robert Bosch GmbH: *See*—
Braschel, Volker, 4,485,445, Cl. 364-426.000.
Grunwald, Werner; and Schmid, Kurt, 4,485,129, Cl. 427-97.000.
Holl, Walter; and Mandel, Adolf, 4,485,155, Cl. 429-194.000.
Illetschko, Gerhard, 4,485,403, Cl. 358-167.000.
Leiber, Heinz, 4,484,784, Cl. 303-92.000.
Schulz, Axel; and Sochor, Josef, 4,485,399, Cl. 358-36.000.
Robert Henry Smith Enterprises, Inc.: *See*—
Smith, Robert H., 4,484,688, Cl. 217-91.000.
Roberts, Lewis L., to Mercury Development Corporation. Slab-hanging means auxiliary support means. 4,484,422, Cl. 52-137.000.
Robertson, Wilbert J.; and Shaw, Roger C., to Kerr-McGee Chemical Corporation. Process of producing manganese sulfate solutions. 4,485,073, Cl. 423-49.000.
Robinson, Daniel E.: *See*—
Norling, Thomas B.; Polkowski, Joseph H.; Poulsen, Jeffrey A.; and Robinson, Daniel E., 4,485,271, Cl. 179-19.000.
Robinson, Scott S., Jr.: *See*—
Balaska, Richard K.; Hunter, Robert L.; and Robinson, Scott S., Jr., 4,485,457, Cl. 364-900.000.
Robinson, W. W., to Richmond Metal Finishers, Inc. Process for providing metallic articles and the like with wear-resistant coatings. 4,484,988, Cl. 204-35.100.
Robinson, William M.: *See*—
Grassauer, Willie K.; and Robinson, William M., 4,484,704, Cl. 228-180.00A.
Rockwell International Corporation: *See*—
Wissink, Ronald L.; and Munsch, James A., 4,484,484, Cl. 74-41.000.
Roe, Frank L.: *See*—
Characklis, William G.; and Roe, Frank L., 4,485,450, Cl. 364-550.000.
Roest, Gooitsen: *See*—
Bes, Richard F. T.; Knol, Jan D.; and Roest, Gooitsen, 4,484,952, Cl. 106-308.00Q.
Roger, Loic; Maubois, Jean-Louis; Brule, Gerard; and Piot, Michel, to Institut National de la Recherche Agronomique. Process for obtaining an α-lactalbumin enriched product from whey, and uses thereof. 4,485,040, Cl. 260-122.000.
Rohm GmbH: *See*—
Pfleiderer, Ernst; Taeger, Tilman; and Monsheimer, Rolf, 4,484,924, Cl. 8-94.170.
Rohm and Haas Company: *See*—
Tanger, Charles M., 4,485,254, Cl. 560-21.000.
Rollason, Peter H.: *See*—
Donofrio, Robert L.; Rollason, Peter H.; and Fisher, Mahlon B., 4,485,329, Cl. 313-478.000.
Rolls-Royce Limited: *See*—
Pask, George; Sadler, John H. R.; and Coplin, John F., 4,484,859, Cl. 416-96.00A.
Rolm Corporation: *See*—
Reali, Peter A., 4,485,470, Cl. 370-100.000.

Romanick, John F.: *See—*
Perlinski, Witold; Davis, Irwin J.; and Romanick, John F., 4,485,200, Cl. 523-409.000.

Roncucci, Gabrio: *See—*
Pestellini, Vittorio; Ghelardoni, Mario; Maggi, Carlo Alberto; Roncucci, Gabrio; and Melli, Alberto, 4,485,112, Cl. 424-285.000.

Roper, Jerry M.: *See—*
Everly, Charles R.; and Roper, Jerry M., 4,485,051, Cl. 260-465.00F.

Rosenberg, David B., to Phoenix Medical Corporation. Developer for photothermographic paper. 4,485,294, Cl. 219-216.000.

Rosencwaig, Allan, to Therma-Wave, Inc. Method for evaluating the quality of the bond between two members utilizing thermoacoustic microscopy. 4,484,820, Cl. 374-6.000.

Rosenwald, Peter L. Occular device. 4,484,922, Cl. 604-893.000.

Rosenwinkel, Donald A.: *See—*
Breslow, Jeffrey D.; Zaruba, John V.; and Rosenwinkel, Donald A., 4,484,747, Cl. 273-243.000.

Ross, Ludwig: *See—*
Gliemeroth, Georg; Eichhorn, Uwe; Holzel, Eva; Ross, Ludwig; Krolla, Hans-Georg; Speit, Burkhard; Geiler, Volkmar; and Hoffmann, Hans-Jurgen, 4,485,178, Cl. 501-13.000.

Ross, Victor H., Jr.: *See—*
Ross, Victor H., Sr.; and Ross, Victor H., Jr., 4,484,772, Cl. 285-226.000.

Ross, Victor H., Sr.; and Ross, Victor H., Jr. Rotatable bellows-like cover. 4,484,772, Cl. 285-226.000.

Rossman, Wendell E., to Rossman, Wendell E. Connector for a structural member. 4,484,430, Cl. 52-726.000.

Rossmann, Christian; and Burger, Helga, to Henkel Kommanditgesellschaft auf Aktien. Cleaning compositions containing boric acid or an alkali metal borate in phosphoric acid and their use in cleaning solid surfaces. 4,485,027, Cl. 252-90.000.

Rothman, Irwin L., to Loral Corporation. Multiple layer coil winding system. 4,484,974, Cl. 156-425.000.

Rothstein, Robert, to S.A. Analis. Standard hardware-software interface for connecting any instrument which provides a digital output stream with any digital host computer. 4,485,439, Cl. 364-200.000.

Roto Press Limited: *See—*
Kosters, Larry J., 4,484,606, Cl. 141-114.000.

Rottenberg, David A.; Miodownik, Saul; and Epifanio, William E., II, to Memorial Hospital for Cancer & Allied Diseases. Electrolytic fluid flow rate method and apparatus. 4,484,582, Cl. 128-630.000.

Roux, Joel; and Grawitz, Auguste. Tanning method designed to make leathers mycostatic, antimycotic, and antifungal, and the resulting products. 4,484,925, Cl. 8-94.260.

Rovanco Corp.: *See—*
Stonitsch, Lawrence J., 4,484,386, Cl. 29-455.00R.

Rowe, David W.; and Waynick, William R., to Paul Mueller Company. Dual flow condenser with through connections. 4,484,623, Cl. 165-164.000.

Rowe, Murray A.; and Ulmer, Ewald R., to Bid-Well Corporation. Pavers. 4,484,834, Cl. 404-84.000.

Rozniecki, Edward J., to United States of America, Army. Fire suppressant nozzle. 4,484,710, Cl. 239-290.000.

Rubens, Louis C.; and Alexander, Willard E., to Dow Chemical Company, The. Expandable synthetic resinous thermoplastic particles, method for the preparation thereof and the application therefor. 4,485,193, Cl. 521-58.000.

Rucker, Klaus G., to Du Pont de Nemours, E. I., and Company. High-temperature-stable ignition powder. 4,484,960, Cl. 149-22.000.

Rudolph, Hans: *See—*
Scharf, Hans-Dieter; Frauenrath, Herbert; Heine, Hans-Georg; Rudolph, Hans; Neuhaus, Karl-Friedrich; and Bendszus, Otto, 4,485,249, Cl. 549-347.000.

Ruesch Machine Company, Inc.: *See—*
Korcusko, Peter J.; and Bohl, Fred R., 4,484,716, Cl. 242-79.000.

Ruhovets, Naum: *See—*
Fertl, Walter H.; and Ruhovets, Naum, 4,484,470, Cl. 73-152.000.

Rumbaugh, James T.: *See—*
McMickle, Robert L.; Rumbaugh, James T.; and Netsch, Robert L., 4,484,586, Cl. 128-786.000.

Rummele, Winfried, to Sohler Airtex GmbH. Movable cleaning apparatus for drafting mechanism of spinning and twisting machines. 4,484,434, Cl. 57-304.000.

Runge, Richard G. Immunotoxin conjugate which comprises arsanilic acid, useful for treating malignant tumors, particularly pancreatic cancer. 4,485,093, Cl. 424-85.000.

Runkle, Dean E., to Bendix Corporation, The. Piston pump. 4,484,866, Cl. 417-495.000.

Rusek, Milos: *See—*
Buhler, Niklaus; Reber, Jean F.; Meier, Kurt; and Rusek, Milos, 4,484,992, Cl. 204-157.10R.

Russell, Merton. Automatic milk bulk tank lockout system and method of using same. 4,484,593, Cl. 137-1.000.

Russell, Robert S.: *See—*
Ashton, William H.; Russell, Robert S.; and Zajac, David C., 4,485,092, Cl. 424-69.000.

Rust, David C.: *See—*
Mitchell, Hal D.; and Rust, David C., 4,484,364, Cl. 2-413.000.

Rutter, Paul R.; and Veal, Christopher J., to British Petroleum Company p.l.c., The. Solid fuel oil mixtures. 4,484,929, Cl. 44-51.000.

Ryan, Donald J.: *See—*
Dawes, James W.; and Ryan, Donald J., 4,485,062, Cl. 264-171.000.

Ryobi Limited: *See—*
Tunoda, Kikuo, 4,484,720, Cl. 242-218.000.

Rystad, Arnold O., to Work Right Products, Inc. Adjustable shower door jamb assembly. 4,484,411, Cl. 49-505.000.

S R I International: *See—*
Buxton, James L., 4,484,477, Cl. 73-626.000.

S. T. Dupont: *See—*
Grossiord, Claude R.; and Molliex, Jean P., 4,484,888, Cl. 431-344.000.

Saab-Scania Aktiebolag: *See—*
Gadefelt, Bengt G.; and Saaf, Lars L., 4,484,550, Cl. 123-308.000.
Gillbrand, Per S., 4,484,445, Cl. 60-605.000.

Saaf, Lars L.: *See—*
Gadefelt, Bengt G.; and Saaf, Lars L., 4,484,550, Cl. 123-308.000.

Sabo, Stephen C.: *See—*
Wagner, William D.; and Sabo, Stephen C., 4,484,965, Cl. 156-117.000.

Sabonis, Charles J.; and Clark, Anthony W., to Xerox Corporation. Tractor feed assembly tensioning bar. 4,484,702, Cl. 226-74.000.

Sabot, Jean-Louis: *See—*
Bauer, Denise; Fourre, Patrick; and Sabot, Jean-Louis, 4,485,076, Cl. 423-112.000.

Sackner, Marvin A.; and Watson, Herman, to Key Pharmaceuticals, Inc. Drug delivery method and inhalation device therefor. 4,484,577, Cl. 128-203.280.

Sadler, John H. R.: *See—*
Pask, George; Sadler, John H. R.; and Coplin, John F., 4,484,859, Cl. 416-96.00A.

Saigo, Takaichi: *See—*
Maruyama, Yasuhiro; Saigo, Takaichi; Tanahashi, Sakae; and Masai, Yoshihei, 4,485,444, Cl. 364-426.000.

Saito, Susumu: *See—*
Fujinawa, Masaaki; and Saito, Susumu, 4,485,410, Cl. 358-294.000.

Saitoh, Hiroshi: *See—*
Imamura, Kenji; Saitoh, Hiroshi; Kakizaki, Katsuhisa; and Makino, Motohiko, 4,485,162, Cl. 430-106.600.

Sakabe, Yukio, to Murata Manufacturing Co., Ltd. Dielectric ceramic composition. 4,485,181, Cl. 501-136.000.

Sakaguchi, Tatsunori: *See—*
Horikoshi, Shigeru; and Sakaguchi, Tatsunori, 4,484,653, Cl. 180-233.000.

Sakai, Hiromitsu, to C. Uyemura & Co., Ltd. Degassing assembly. 4,484,936, Cl. 55-159.000.

Sakai, Kiyoshi: *See—*
Watanabe, Katsunori; Ohta, Shigeto; Sakai, Kiyoshi; Ishikawa, Shozo; and Kitahara, Makoto, 4,485,159, Cl. 430-58.000.

Sakai, Tokuji: *See—*
Onodera, Tamio; Sakai, Tokuji; Yamasaki, Yasuo; and Sumitani, Koji, 4,485,185, Cl. 502-71.000.

Sakai, Yutaka: *See—*
Doi, Yoshikazu; Sakai, Yutaka; and Ohno, Kazunori, 4,484,799, Cl. 350-426.000.

Sakakibara, Shinsuke: *See—*
Inaba, Hajimu; Sakakibara, Shinsuke; and Nihei, Ryo, 4,484,855, Cl. 414-736.000.

Sakakibara, Shiro, to Aisin Warner Kabushiki Kaisha. Overdrive unit in automatic transmissions. 4,484,494, Cl. 74-781.00R.

Sakakiyama, Ryuzo: *See—*
Takano, Toshio; and Sakakiyama, Ryuzo, 4,484,672, Cl. 192-3.560.

Sakamoto, Akira: *See—*
Takigawa, Toshiji; Sakamoto, Akira; and Takahashi, Ryuji, 4,484,443, Cl. 60-534.000.

Sakashita, Isao: *See—*
Inoue, Susumu; Sakashita, Isao; Meguro, Kazunori; and Hamaguchi, Kunio, 4,485,143, Cl. 428-334.000.

Sakata, Hiromi: *See—*
Tsudaka, Hideaki; Washio, Takaji; Kozuka, Nobuhiko; Iseki, Masahide; Watanabe, Toshio; Kai, Masami; Yoshiyama, Toshio; and Sakata, Hiromi, 4,484,734, Cl. 271-9.000.

Sakuma, Kazuyoshi: *See—*
Nihei, Tetsuo; Maki, Toshio; and Sakuma, Kazuyoshi, 4,484,464, Cl. 72-38.000.

Sakurai, Hiroshi: *See—*
Matsuura, Hitoshi; Yamazaki, Etsuo; and Sakurai, Hiroshi, 4,485,338, Cl. 318-569.000.

Sakurai, Masaki: *See—*
Sugiyama, Hiroyuki; Sakurai, Masaki; Abe, Ryozo; and Yoshihara, Kenji, 4,485,412, Cl. 358-310.000.

Sakurai, Tomiyasu: *See—*
Ochiai, Kenji; and Sakurai, Tomiyasu, 4,485,214, Cl. 525-179.000.

Salerno, Stephen G.: *See—*
Gunter, Harvey R.; Stutzman, Gary L.; and Salerno, Stephen G., 4,485,217, Cl. 525-240.000.

Salloum, James S.: *See—*
Forshee, David J.; and Salloum, James S., 4,484,525, Cl. 104-95.000.

Salomon, Georges P. J., to Salomon S.A. Ski binding and boot. 4,484,762, Cl. 280-615.000.

Salomon S.A.: *See—*
Salomon, Georges P. J., 4,484,762, Cl. 280-615.000.

Samcoe Holding Corporation: *See—*
Diggle, Edmund A., Jr.; and Krajcovic, John, 4,484,369, Cl. 8-151.000.

Samman, Nicolas G.: *See—*
Fisher, Ian P.; and Samman, Nicolas G., 4,485,004, Cl. 208-112.000.

Sampling Technology, Inc.: *See—*
Laird, Daniel G.; Laird, James C.; and Tomlin, Robert L., 4,484,481, Cl. 73-863.120.

Samuels, Ricardo. Blue print scale. 4,484,395, Cl. 33-494.000.

Sandberg, Edmund, to Ampex Corporation. Automatic chroma filter. 4,485,396, Cl. 358-27.000.
Sande, Lloyd P. Adjustable and pivotal mailbox support. 4,484,705, Cl. 232-39.000.
Sanders, David E.: *See*—
Andren, Carl F.; Mosley, William H., Jr.; and Sanders, David E., 4,485,358, Cl. 332-23.00R.
Sando Iron Works Co., Ltd.: *See*—
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,484,460, Cl. 68-5.00E.
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works Co., Ltd. Apparatus for wet-heat treating a cloth continuously. 4,484,460, Cl. 68-5.00E.
Sandoz Ltd.: *See*—
Avar, Lajos; Kalt, Evelyne; and Reinshagen, Hellmuth, 4,485,034, Cl. 252-403.000.
Valenti, Salvatore, 4,484,927, Cl. 8-554.000.
Sandusky, Randall L., to Control Data Corporation. Servo data driven motor speed control. 4,485,337, Cl. 318-314.000.
Sanmeidenki Kabushikikaisha: *See*—
Niwa, Hideo; and Takahashi, Kozi, 4,485,424, Cl. 361-152.000.
Sano, Jun, to Tokyo Shibaura Denki Kabushiki Kaisha. Interface circuit for an integrated injection logic circuit. 4,485,318, Cl. 307-475.000.
Sanyo Electric Co., Ltd.: *See*—
Kuwano, Yukinori; Nakano, Shoichi; Yokoo, Toshiaki; and Shibata, Kenichi, 4,485,305, Cl. 250-338.000.
Sarkozy, Robert F.; and Simson, Morris, to BTU Engineering Corporation. Apparatus for providing depletion-free uniform thickness CVD thin-film on semiconductor wafers. 4,484,538, Cl. 118-729.000.
Sarnoff, Stanley J.; Calkins, George B.; and Lopez, Claudio, to Survival Technology, Inc. Dual mode automatic injector. 4,484,910, Cl. 604-136.000.
Sasaki, Setsuo: *See*—
Kimura, Takeshi; Watanabe, Satoshi; Hirano, Hirofumi; and Sasaki, Setsuo, 4,484,520, Cl. 101-99.000.
Sasaki, Toshio: *See*—
Shiga, Akinobu; Fukui, Yoshiharu; Sasaki, Toshio; Okawa, Masahisa; and Matsuura, Hideaki, 4,485,035, Cl. 502-115.000.
Sasaya, Hideaki: *See*—
Inagaki, Mitsuo; and Sasaya, Hideaki, 4,484,873, Cl. 418-150.000.
Sassi, Alessandro P., to Boeing Company, The. Aircraft lift control system with acceleration and attitude limiting. 4,485,446, Cl. 364-435.000.
Satchwell, David L., to Garrett Corporation, The. Integral header heat exchanger. 4,484,622, Cl. 165-153.000.
Satis Vacuum AG: *See*—
Ciparisso, Delio, 4,485,124, Cl. 427-55.000.
Sato, Hidemi; Kaneda, Aizo; Yokono, Hitoshi; Ohashi, Atsuyoshi; Miyake, Kiyohide; Kodama, Toshiro; and Suzuki, Kiichi, to Hitachi, Ltd. Optical fiber connector. 4,484,796, Cl. 350-96.210.
Sato, Kunio, to Casio Computer Co., Ltd. Tuning control apparatus. 4,484,506, Cl. 84-1.010.
Sato, Masaaki, to Olympus Optical Co., Ltd. Personal audio device. 4,485,276, Cl. 179-157.000.
Sato, Takashi: *See*—
Kawaguchi, Takeo; and Sato, Takashi, 4,484,814, Cl. 335-301.000.
Sato, Tetsuo, to Hitachi, Ltd. Variable electronic impedance circuit. 4,485,350, Cl. 330-86.000.
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Takewa, Hiroyuki; Satoh, Katsuaki; and Ishikawa, Seiichi, 4,484,383, Cl. 29-169.500.
Satoh, Kenji; and Yonezu, Kiyoshi, to Kuraray Co., Ltd. Method for continuous copolymerization of ethylene and vinyl acetate. 4,485,225, Cl. 526-331.000.
Satou, Hiroshi: *See*—
Miura, Hirohisa; Satou, Hiroshi; Natsume, Toshio; and Katagiri, Hidenori, 4,484,943, Cl. 75-0.50B.
Sauer, Gale E., to Donn Incorporated. Suspended ceiling grid system. 4,484,428, Cl. 52-311.000.
Sawyer, Tomi K.: *See*—
Hruby, Victor J.; Hadley, Mac E.; and Sawyer, Tomi K., 4,485,039, Cl. 260-112.50R.
Sayko, Steven P., to NCR Corporation. Compact print head. 4,485,388, Cl. 346-140.00R.
Schaeffer-Scovill Verbindungstechnik GmbH: *See*—
Appelt, Horst G.; and Wolfertz, Gunter, 4,484,379, Cl. 24-197.000.
Schaffhausen, John G.: *See*—
Serres, Carl; and Schaffhausen, John G., 4,485,023, Cl. 252-51.50R.
Schaller, Albert R.; Vetter, Werner; and Steiner, Dieter J. Device for automatically winding up a feeder cable. 4,485,278, Cl. 191-12.400.
Scharf, Hans-Dieter; Frauenrath, Herbert; Heine, Hans-Georg; Rudolph, Hans; Neuhaus, Karl-Friedrich; and Bendszus, Otto, to Ciba-Geigy Corporation. 2-Acylated dihydro-1,3-dioxepins, process for the production thereof and use thereof as photo-initiators. 4,485,249, Cl. 549-347.000.
Schauer, Felix: *See*—
Minati, Kurt F.; Morgan, Gerry H.; McNerney, Andrew J.; and Schauer, Felix, 4,485,266, Cl. 174-15.0CA.
Schemmel, Hans R.; and Reichelt, Ingo, to Philips Kommunikations Industrie AG. Circuit for deriving of signals and counter cycle signals from one sided input signal. 4,485,351, Cl. 330-288.000.
Schenck-Auto-Service-Gerate GmbH: *See*—
Maus, Otfrid, 4,484,474, Cl. 73-462.000.
Scheuter, Karl; and Fischer, Gerhard, to Ing. Rudolf Hell GmbH. Method for producing printing forms with irregularly distributed printing points. 4,485,397, Cl. 358-283.000.
Schifreen, Richard S.: *See*—
Bollin, Ernest, Jr.; and Schifreen, Richard S., 4,485,176, Cl. 436-86.000.
Schildkraut, Alan L.; and Werth, Dee A., to Bendix Corporation, The. Anti-decoupling device for an electrical connector. 4,484,790, Cl. 339-89.00M.
Schippers, Heinz: *See*—
Dammann, Peter; Schippers, Heinz; and Bauer, Karl, 4,484,437, Cl. 57-340.000.
Schlagheck, Werner: *See*—
Hellwig, Paul; and Schlagheck, Werner, 4,485,326, Cl. 313-318.000.
Schlumberger Technology Corporation: *See*—
Lanmon, C. P., II, 4,484,628, Cl. 166-250.000.
Schmid, Kurt: *See*—
Grunwald, Werner; and Schmid, Kurt, 4,485,129, Cl. 427-97.000.
Schmidt Couplings, Incorporated: *See*—
Haarmann, Walter, 4,484,899, Cl. 464-69.000.
Schmidt, Paul J.; and Hung, William M., to Sterling Drug Inc. 3[(Alkoxy)(4-aminophenyl, 1-naphthyl or 1-biphenylyl)methyl]1H-indoles. 4,485,242, Cl. 548-506.000.
Schmitt, Kirk D.; and Shim, Joosup, to Mobil Oil Corporation. Hard water stability improvers for oil-in-water emulsions hydraulic fluids. 4,485,026, Cl. 252-78.100.
Schneider, Andre , to Compagnie Generale des Etablissements Michelin. Drive belt of trapezoidal cross-section. 4,484,903, Cl. 474-242.000.
Schneider, Klaus: *See*—
Vleggaar, Jan; Ostertag, Karl; and Schneider, Klaus, 4,484,624, Cl. 165-172.000.
Schneider, Rudolf, to Erowa AG. Wire guiding device for electroerosion finishing machines. 4,485,288, Cl. 219-69.00W.
Schoenmakers, Johannes J. M., to U.S. Philips Corporation. Magnetic-tape cassette with anti-telescoping guides and reels. 4,484,719, Cl. 242-199.000.
Schoenmakers, Johannes J. M., to U.S. Philips Corporation. Magnetic-tape cassette apparatus having very low azimuth error. 4,485,420, Cl. 360-130.210.
Scholz, Christoph: *See*—
Sprenger, Heinz; and Scholz, Christoph, 4,485,149, Cl. 428-627.000.
Scholz, Wilfried W.: *See*—
Homan, Clarke G.; Scholz, Wilfried W.; Standish, William J.; and Leiberich, Andreas, 4,485,152, Cl. 428-670.000.
Schon, Rudolf: *See*—
Glock, Alfred; Schon, Rudolf; Schonung, Bernhard; and Seebo, Kurt, 4,484,376, Cl. 19-0.250.
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Schor, Kenneth M.: *See*—
Hill, William D.; Hollenbeck, Dennis W.; and Schor, Kenneth M., 4,485,342, Cl. 323-351.000.
Schott-Glaswerke: *See*—
Gliemeroth, Georg; Eichhorn, Uwe; Holzel, Eva; Ross, Ludwig; Krolla, Hans-Georg; Speit, Burkhard; Geiler, Volkmar; and Hoffmann, Hans-Jurgen, 4,485,178, Cl. 501-13.000.
Schouten, Henry G., to American Home Products Corporation. Reduction of indole-2-carboxylic acids to indoline-2-carboxylic acids with lithium, sodium, or potassium in ammonia. 4,485,241, Cl. 548-491.000.
Schreiber, Alfons: *See*—
Patzold, Dieter; Schreiber, Alfons; and Tiwi, Peter, 4,484,371, Cl. 15-41.00R.
Patzold, Dieter; Schreiber, Alfons; and Tiwi, Peter, 4,484,372, Cl. 15-42.000.
Schreyer, Gerold: *See*—
Bung, Richard; Gass, Karl; Schreyer, Gerold; and Welzel, Gerhard, 4,485,055, Cl. 264-8.000.
Schudlich, Kurt; Vielstich, Gunter; Muhlenbeck, Josef; Otto, Josef; Bauer, Hannsgeorg; Zollner, Dieter H.; and Rittmann, Friedrich, to Arc Technologies Systems, Ltd. Device for nippling up electrodes in an electric furance. 4,484,897, Cl. 445-67.000.
Schultz, Thomas E.: *See*—
DeRusha, Mark A.; Schultz, Thomas E.; and Luchio, Stephen W., 4,484,574, Cl. 128-156.000.
Schulz, Axel; and Sochor, Josef, to Robert Bosch GmbH. Method and apparatus approximately correcting errors in a digital video signal. 4,485,399, Cl. 358-36.000.
Schulz & Company KG: *See*—
Schulz, Wilhelm, 4,484,771, Cl. 285-138.000.
Schulz, Wilhelm, to Schulz & Company KG. Flange for connecting pipes. 4,484,771, Cl. 285-138.000.
Schumacher, Peter M., to Measuronics Corporation. Data acquisition system for large format video display. 4,485,409, Cl. 358-294.000.
Schutz, Rudolph W.: *See*—
Reba, Imants; Schutz, Rudolph W.; and Kozbur, Nestor, 4,484,500, Cl. 83-98.000.
Schwaller, Bruno, to SIG Schweizerische Industrie-Gesellschaft. Weapon magazine. 4,484,403, Cl. 42-50.000.
Schwartz, Charles A. Welding system. 4,485,289, Cl. 219-90.000.
Schwarz, Georg, to Ludwig Engel KG. Clamping device for clamping the form tools of an injection molding machine to form supports. 4,484,880, Cl. 425-192.00R.
SCM Finanziaria S.p.A.: *See*—
Gemmani, Giuseppe, 4,484,607, Cl. 144-82.000.
Scott, Bentley N., to Texas Instruments Incorporated. Switched geometry oscillator. 4,485,355, Cl. 331-117.0FE.
Scozzafava, Michael; and Molaire, Michel F., to Eastman Kodak Company. Electrophotographic elements having barrier layers of cross-

linked polymers of aliphatic or aromatic monomers containing α,β-ethylenically unsaturated carbonyl-containing substituents. 4,485,161, Cl. 430-64.000.

Scruggs, David M., to Dresser Industries, Inc. High pressure seal joint. 4,484,750, Cl. 277-9.000.

Searby, Anthony D., to Micro Consultants Limited. Video image processing system. 4,485,402, Cl. 358-160.000.

Sebald, Richard: *See*—
Bohm, Friedrich; and Sebald, Richard, 4,485,407, Cl. 358-229.000.

Secrist, Duane R.; and Clark, James M., to Great Lakes Carbon Corporation. Corrosion-resistant ceramic electrode for electrolytic processes. 4,484,997, Cl. 204-243.00R.

Sedlmair, Gerhard, to Marker-Patentvertwertungsgesellschaft mbH. Heelholder for a safety ski binding. 4,484,763, Cl. 280-618.000.

Seebo, Kurt: *See*—
Glock, Alfred; Schon, Rudolf; Schonung, Berahard; and Seebo, Kurt, 4,484,376, Cl. 19-0.250.

Segawa, Hirohisa: *See*—
Tabata, Youichiro; Ueguri, Shigeo; Mizuno, Takaji; Segawa, Hirohisa; and Hiramoto, Seigo, 4,485,293, Cl. 219-130.310.

Seiko Instruments & Electronics Ltd.: *See*—
Kawashima, Hirofumi, 4,484,382, Cl. 29-25.350.

Seipp, Hans: *See*—
Franz, Peter; and Seipp, Hans, 4,485,060, Cl. 264-102.000.

Sekido, Satoshi; Tachibana, Hirokazu; and Ninomiya, Yoshito, to Matsushita Electric Industrial Co., Ltd. Catalysts for converting reductive and oxidative gases in exhaust gases into innoxious gases. 4,485,191, Cl. 502-303.000.

Sekihara, Kensuke: *See*—
Kohno, Hideki; Shiono, Hidemi; Sekihara, Kensuke; Yanaka, Shigenobu; and Suzuki, Takaji, 4,485,480, Cl. 378-4.000.

Sekimoto, Kunitoshi; Mamiya, Yoneji; and Ishikawa, Tadashi, to Nihon Nosan Kogyo K.K. Method for promoting healing of wound and lowering blood level of creatine phosphokinase. 4,485,098, Cl. 424-105.000.

Sena, Ted: *See*—
Ledis, Stephen L.; Sena, Ted; Crews, Harold R.; and Carter, James H., II, 4,485,175, Cl. 436-63.000.

Serres, Carl; and Schaffhausen, John G., to Standard Oil Company (Indiana). Lubricating oil containing Mannich condensation product of ethylene/propylene/carbonyl polymers. 4,485,023, Cl. 252-51.50R.

Service Machine Co.: *See*—
Nash, James H., 4,484,690, Cl. 220-88.00A.

Seto, Junetsu: *See*—
Arakawa, Seiichi; Kawasumi, Koichi; and Seto, Junetsu, 4,485,168, Cl. 430-345.000.

Seward, Glen, to Cincinnati Electronics Corporation. Apparatus for and method of impedance matching. 4,485,360, Cl. 333-17.00M.

Shames, Daniel: *See*—
Campi, Morris; Farrar, Frederick; and Shames, Daniel, 4,485,362, Cl. 333-128.000.

Shanley, Robert L., II; and Harwood, Leopold A., to RCA Corporation. PLL Oscillator synchronizing system with DC control of free-running frequency. 4,485,354, Cl. 331-8.000.

Sharp Kabushiki Kaisha: *See*—
Kinoshita, Hiroshi; Ohba, Toshihiro; Kawaguchi, Masashi; Kanatani, Yoshiharu; and Uede, Hisashi, 4,485,379, Cl. 340-781.000.
Maegawa, Toshiyuki; and Nakatsuji, Haruo, 4,485,415, Cl. 360-46.000.
Nakatani, Hiroshi; and Yamamoto, Hachizou, 4,485,441, Cl. 364-405.000.

Shasta Beverages, Inc.: *See*—
Fry, Harry B., Jr., 4,484,697, Cl. 222-95.000.

Shaw, Rick L.: *See*—
Sweeney, William T.; Shaw, Rick L.; and Webb, Frederick A., 4,484,861, Cl. 417-15.000.

Shaw, Roger C.: *See*—
Robertson, Wilbert J.; and Shaw, Roger C., 4,485,073, Cl. 423-49.000.

Shay, Lucas K.; and Reiter, Stephen E., to Phillips Petroleum Company. Amine treatment of polysaccharide solution. 4,485,020, Cl. 252-8.55D.

Sheeran, Edward T., Jr., to Du Pont de Nemours, E. I., and Company. Microtube adapter having a holding and uncapping apparatus. 4,484,907, Cl. 994-85.000.

Shell Offshore Inc.: *See*—
Nandlal, Samlal; and McGuire, David P., 4,484,839, Cl. 405-211.000.
Nandlal, Samlal; and McGuire, David P., 4,484,840, Cl. 405-211.000.

Shell Oil Company: *See*—
Bannon, Robert P., 4,484,983, Cl. 203-42.000.
Bannon, Robert P., 4,484,984, Cl. 203-42.000.
Bannon, Robert P., 4,484,985, Cl. 203-42.000.
Bannon, Robert P., 4,484,986, Cl. 203-42.000.
Blytas, George C., 4,485,082, Cl. 423-573.00R.
Blytas, George C., 4,485,083, Cl. 423-573.00R.
Stevens, James W., 4,484,838, Cl. 405-191.000.
Willcock, Richard R., 4,484,821, Cl. 374-24.000.

Shelly, John: *See*—
Chapin, Herbert D., Jr.; Bonnescuelle de Lespinois, Pierre J.; Young, Alan H.; and Shelly, John, 4,485,398, Cl. 358-50.000.

Shen, Chung Y.: *See*—
Lannert, Kent P.; Shen, Chung Y.; and Trieu, Dat S., 4,485,049, Cl. 260-465.50R.

Shenkir, Cyndy A.: *See*—
Nettles, William C., Jr.; Morrison, Richard K.; Xie, Zhong-Neng; Ball, Debra; Shenkir, Cyndy A.; and Vinson, S. Bradleigh, 4,484,539, Cl. 119-1.000.

Shepherd, Robert G., to American Cyanamid Company. Method of treating hyperlipidemia with 4-(monoalkylamino)benzoic acid amides. 4,485,105, Cl. 424-248.540.

Sheppard, Darrel J., Sr. Gearless hydraulic transmission and vehicle drive system. 4,484,655, Cl. 180-308.000.

Sherif, Fawzy G., to Stauffer Chemical Company. Process for preparing an oxidation catalyst. 4,485,190, Cl. 502-243.000.

Sherwood, Nancy S.; Costello, Christine A.; and Matz, Gary F., to Calgon Corporation. Use of polyampholytes to enhance oil and/or gas recovery. 4,484,631, Cl. 166-274.000.

Shibata, Kenichi: *See*—
Kuwano, Yukinori; Nakano, Shoichi; Yokoo, Toshiaki; and Shibata, Kenichi, 4,485,305, Cl. 250-338.000.

Shibuya, Tsunenori; and Iio, Masahiro, to Diesel Kiki Co. Ltd. Vane compressor having improved cooling and lubrication of drive shaft-seal means and bearings. 4,484,868, Cl. 418-15.000.

Shida, Yoshiaki; Fujikawa, Hisao; Koike, Masao; Murayama, Junichiro; and Akiyama, Shunichiro, to Sumitomo Metal Industries, Ltd.; and Nippon Stainless Steel Co., Ltd. Process for producing heat-resistant ferritic stainless steel sheet. 4,484,956, Cl. 148-12.0EA.

Shiga, Akinobu; Fukui, Yoshiharu; Sasaki, Toshio; Okawa, Masahisa; and Matsuura, Hideaki, to Sumitomo Chemical Company, Limited. Process for producing highly stereoregular α-olefin polymers. 4,485,035, Cl. 502-115.000.

Shim, Joosup: *See*—
Schmitt, Kirk D.; and Shim, Joosup, 4,485,026, Cl. 252-78.100.

Shimadzu Corporation: *See*—
Akiyama, Osamu; Ichikawa, Tetsuo; and Tsunazawa, Yoshio, 4,484,815, Cl. 356-325.000.

Shimamune, Takayuki: *See*—
Asano, Hiroshi; Shimamune, Takayuki; Nitta, Hideo; and Hirayama, Ryuta, 4,484,999, Cl. 204-290.00R.

Shimano Industrial Company Limited: *See*—
Shimano, Keizo, 4,484,490, Cl. 74-489.000.

Shimano, Keizo, to Shimano Industrial Company Limited. Brake operating device for a bicycle. 4,484,490, Cl. 74-489.000.

Shimaoka, Motohiro, to Alps Electric Co., Ltd. Door opening and closing mechanism for disc driving apparatuses. 4,485,464, Cl. 369-77.100.

Shimazaki, Hiroshi: *See*—
Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; Shimazaki, Hiroshi; and Isida, Tosio, 4,485,056, Cl. 264-41.000.

Shimizu, Atsushi: *See*—
Ikeda, Tatsuhiko; Igarashi, Takeshi; and Shimizu, Atsushi, 4,485,171, Cl. 435-30.000.

Shimizu, Katsuichi: *See*—
Nakahata, Kimio; Tajima, Hatsuo; Iwami, Naoki; Masuda, Shunichi; Shimizu, Katsuichi; Kawatsura, Yoshihiro; Suzuki, Koji; and Yokomizo, Yoshikazu, 4,484,811, Cl. 355-14.0CH.

Shimizu, Masaaki. Bookbinding machine. 4,484,850, Cl. 412-11.000.

Shimizu, Takafumi: *See*—
Honda, Isao; and Shimizu, Takafumi, 4,485,270, Cl. 179-2.00E.

Shimoda, Yutaka: *See*—
Yamamoto, Tsutomu; Ashizawa, Masaaki; and Shimoda, Yutaka, 4,485,138, Cl. 428-131.000.

Shin-Etsu Chemical Co., Ltd.: *See*—
Inoue, Yoshio; and Okami, Takehide, 4,485,206, Cl. 524-719.000.

Shingu, Hideo; Ishihara, Keiichi; Doi, Akira; and Fujimori, Naoji, to Sumitomo Electric Industries, Ltd. Process for the production of diamond powder. 4,485,080, Cl. 423-446.000.

Shinozaki, Fumiaki: *See*—
Watanabe, Shojiro; Namiki, Tomizo; and Shinozaki, Fumiaki, 4,485,139, Cl. 428-219.000.

Shintani, Atsunobu; Yamakami, Yoshiaki; and Hiraishi, Hisashi, to Kubota, Ltd. Non-magnetic alloy having high hardness and good weldability. 4,484,958, Cl. 148-38.000.

Shiono, Hidemi: *See*—
Kohno, Hideki; Shiono, Hidemi; Sekihara, Kensuke; Yanaka, Shigenobu; and Suzuki, Takaji, 4,485,480, Cl. 378-4.000.

Shipp, Kenneth O., Jr.: *See*—
Horn, Gary R.; and Shipp, Kenneth O., Jr., 4,484,826, Cl. 400-279.000.

Shiratsuchi, Kouji; and Ishikawa, Yoshimi, to Honda Giken Kogyo Kabushiki Kaisha. Suspension system. 4,484,652, Cl. 180-227.000.

Shvets, Viktor B.: *See*—
Feklin, Valentin I.; Shvets, Viktor B.; and Mazo, Boris M., 4,484,640, Cl. 175-19.000.

Sibley, Henry C., to General Signal Corporation. Memory management method and apparatus for initializing and/or clearing R/W storage areas. 4,485,435, Cl. 364-200.000.

Sidlo, Gordon D. Garden row making tool. 4,484,635, Cl. 172-26.000.

Siedel, Joachim; Neumann, Ulrich; Ziegenhorn, Joachim; Batz, Hans-George; Lenz, Helmut; Pautz, Brigitte; and Albert, Winfried, to Boehringer Mannheim GmbH. Creatinine specific antibody. 4,485,177, Cl. 436-547.000.

Siegel, Larry E.; Pavkovich, John M.; and Jahn, George E., to Varian Associates, Inc. Stabilized microwave power amplifier system. 4,485,349, Cl. 330-3.000.

Siemens Aktiengesellschaft: *See*—
Goerne, Jan; and Traulsen, Wilfried, 4,485,311, Cl. 307-270.000.
Mugele, Kurt, 4,484,457, Cl. 62-500.000.
Witte, Hans-Hermann, 4,484,794, Cl. 350-96.160.

Siemens Corporation: *See*—
Minch, Morris L.; and Wagner, Theodore W., 4,485,277, Cl. 179-170.0NC.
SIG Schweizerische Industrie-Gesellschaft: *See*—
Schwaller, Bruno, 4,484,403, Cl. 42-50.000.
Sikora, Helga: *See*—
Herwig, Walter; Decker, Rudolf; Sikora, Helga; and Erbes, Kurt, 4,485,166, Cl. 430-260.000.
Sikora, Paul T. Heat recovery glazing. 4,484,567, Cl. 126-431.000.
Silvestro, Michael J.: *See*—
Leighton, Kenneth B.; and Silvestro, Michael J., 4,484,360, Cl. 2-22.000.
Leighton, Kenneth B.; and Silvestro, Michael J., 4,484,361, Cl. 2-24.000.
Simeth, Claus, to M.A.N. Roland Druckmaschinen AG. System for reducing setting-up time in printing machines having register adjustment devices. 4,484,522, Cl. 101-248.000.
Simko, Aladar O.: *See*—
Choma, Michael A.; Husak, Philip W.; and Simko, Aladar O., 4,484,551, Cl. 123-336.000.
Simmons Universal Corporation: *See*—
Weaver, Henry J., 4,484,609, Cl. 144-256.100.
Simms, Lawrence P., to Donn Incorporated. Support system for landscape screens. 4,484,426, Cl. 52-239.000.
Simone, Anthony D.: *See*—
Cole, Larry T.; Simone, Anthony D.; and Tao, Ting C., 4,485,011, Cl. 210-96.100.
Simson, Morris: *See*—
Sarkozy, Robert F.; and Simson, Morris, 4,484,538, Cl. 118-729.000.
Singer, Barry M., to North American Philips Corporation. Lateral junction field effect transistor device. 4,485,392, Cl. 357-22.000.
Singer Company, The: *See*—
Dicke, William C., 4,484,415, Cl. 51-170.0TL.
Singer, Victor; Lushis, Donald V.; and Kirschner, Thomas J., Jr., to Thiokol Corporation. Thrust reversal system. 4,484,439, Cl. 60-230.000.
Singh, Prithvi P. Pipe with tobacco storage. 4,484,590, Cl. 131-180.000.
Singh, Shanker; and Singh, Vijendra P., to International Business Machines Corporation. Method of memory reconfiguration for fault tolerant memory. 4,485,471, Cl. 371-2.000.
Singh, Vijendra P.: *See*—
Singh, Shanker; and Singh, Vijendra P., 4,485,471, Cl. 371-2.000.
Sitte, Helmuth; and Bilek, Walter, to C. Reichert Optische Werke AG. Microtome having a forward-feed control system for the specimen arm and/or the knife. 4,484,503, Cl. 83-717.000.
Sizmann, Rudolf, to Didier-Werke AG. Method of using and storing energy from the environment. 4,484,617, Cl. 165-1.000.
SKF Kugellagerfabriken GmbH: *See*—
Glock, Alfred; Schon, Rudolf; Schonung, Bernhard; and Seebo, Kurt, 4,484,376, Cl. 19-0.250.
Skinner, Stuart M., Jr.: *See*—
Kerfoot, William B.; and Skinner, Stuart M., Jr., 4,484,626, Cl. 166-191.000.
Skolek, Thomas A. Shaft grinding gage. 4,484,414, Cl. 51-165.750.
Slana, Matthew F., to AT&T Bell Laboratories. Control word generation method and source facilities for multirate data time division switching. 4,485,468, Cl. 370-58.000.
Sleeper, John R. Jigsaw puzzle assembly and storage apparatus. 4,484,745, Cl. 273-157.00R.
Sloane, Glenn L. Tubing and fittings with cast-in-place liners. 4,484,770, Cl. 285-55.000.
Slush Puppie Corporation: *See*—
Reuteman, Harry J.; Lampley, Howard B.; and McElroy, Dale E., 4,484,694, Cl. 221-197.000.
Smiley, Harry; and Blechman, Abraham, to Medical Magnetics, Inc. Integrated oral magnetic osteogenic appliances. 4,484,895, Cl. 433-215.000.
Smith, Billy J. Recreational vehicle. 4,484,646, Cl. 180-6.200.
Smith, Daniel D.: *See*—
Mailand, John J.; Langstraat, Warren L.; and Smith, Daniel D., 4,484,932, Cl. 51-335.000.
Smith-Johannsen, Heidi: *See*—
Tan, Yin H.; and Smith-Johannsen, Heidi, 4,485,017, Cl. 210-635.000.
Smith & Nephew Research Limited: *See*—
Potter, William D.; Barclay, Andrew C.; Dunning, Reginald; and Parry, Richard J., 4,484,949, Cl. 106-85.000.
Smith, Norman H. Filtration unit. 4,485,015, Cl. 210-455.000.
Smith, Rex L.; Ankeney, D. Philip; Yates, Patrick A.; Blazek, Henry F.; and Fowler, Steven E., to United States of America, Navy. Detonator, solid state type I film bridge. 4,484,523, Cl. 102-202.500.
Smith, Robert A., to Goodyear Tire & Rubber Company, The. Acrylamide polymerization. 4,485,224, Cl. 526-214.000.
Smith, Robert H., to Robert Henry Smith Enterprises, Inc. Rectangular barrel for aging whiskey. 4,484,688, Cl. 217-91.000.
Smith, Roger D.: *See*—
Wiatt, James G.; Calvert, James W.; Belcher, Samuel L.; and Smith, Roger D., 4,484,884, Cl. 425-534.000.
Smith, Russell P.; Dunlop, Guy R.; and Miles, Carol L. Character reading camera. 4,485,485, Cl. 382-65.000.
Smith, Thomas W.: *See*—
Badesha, Santokh S.; and Smith, Thomas W., 4,484,945, Cl. 75-0.50A.
Smith, William J.: *See*—
Gaietto, Joseph R.; and Smith, William J., 4,485,126, Cl. 427-116.000.
Smiths Industries Public Limited Company: *See*—
Gilroy, Keith; and Johnson, Mark, 4,485,014, Cl. 210-433.200.
Smock, Steven W.: *See*—
Voland, Elmo W.; Adams, George W.; and Smock, Steven W., 4,485,281, Cl. 200-38.00R.
SMS Schloemann-Siemag Aktiengesellschaft: *See*—
Groos, Horst; and Wintzen, Gunther, 4,484,466, Cl. 72-255.000.
Snap-on Tools Corporation: *See*—
Grover, Donald D.; and Mueller, Ralph H., 4,484,469, Cl. 73-119.00A.
Snaper, Alvin A.; and Bortniak, Stephen. Cumulative exposure metering system. 4,485,442, Cl. 364-414.000.
Sochor, Josef: *See*—
Schulz, Axel; and Sochor, Josef, 4,485,399, Cl. 358-36.000.
S.A. Analis: *See*—
Rothstein, Robert, 4,485,439, Cl. 364-200.000.
Societe Anonyme DBA: *See*—
Carre , Jean-Jacques; and Levrai, Roland, 4,484,671, Cl. 188-352.000.
Societe d'Etudes Scientifiques et Industrielles de Ile-de France: *See*—
Besancon, Denis, 4,485,115, Cl. 424-324.000.
Societe d'Exploitation des Procedes Felix Amiot: *See*—
Cadic, Raymond, 4,484,492, Cl. 74-625.000.
Societe Europeenne de Propulsion: *See*—
Dawant, Marcel L.; and Guillemain, Pierre, 4,484,524, Cl. 102-437.000.
Societe Lyonnaise des Eaux et de l'Eclairage: *See*—
Fiessinger, Francois; Thebault, Paul; and Codiasse, Daniel, 4,485,018, Cl. 210-716.000.
Sohar, Ezra: *See*—
Braunstein, Arie; Sohar, Ezra; and Levite, Theodore, 4,485,306, Cl. 250-372.000.
Sohler Airtex GmbH: *See*—
Rummele, Winfried, 4,484,434, Cl. 57-304.000.
Sohn, Norman; Weinstein, Michael A.; and Robbins, Richard D., to Affiliated Surgical Supplies. Rectal area dressing. 4,484,919, Cl. 604-358.000.
Solar Kinetics, Inc.: *See*—
Witt, John D., 4,484,568, Cl. 126-438.000.
Solon Automated Services, Inc.: *See*—
Cohen, M. Roy, 4,484,673, Cl. 194-1.00G.
Sommer, Karl: *See*—
Heinz, Robert; and Sommer, Karl, 4,484,879, Cl. 425-145.000.
Soneda, Mitsuo; Ohtsu, Takaji; and Kutaragi, Ken, to Sony Corporation. Liquid crystal matrix display device. 4,485,380, Cl. 340-784.000.
Sony Corporation: *See*—
Arakawa, Seiichi; Kawasumi, Koichi; and Seto, Junetsu, 4,485,168, Cl. 430-345.000.
Soneda, Mitsuo; Ohtsu, Takaji; and Kutaragi, Ken, 4,485,380, Cl. 340-784.000.
Sony Magnescale Inc.: *See*—
Narimatsu, Akihisa, 4,484,391, Cl. 33-125.00C.
Spacer, John P. Fluid pump for use down a well. 4,484,865, Cl. 417-478.000.
Spaeth, Frederick J.: *See*—
Adams, Richard G.; Goltz, Kurt; and Spaeth, Frederick J., 4,485,131, Cl. 427-388.200.
Spectrum Sports, Inc.: *See*—
Leighton, Kenneth B.; and Silvestro, Michael J., 4,484,360, Cl. 2-22.000.
Leighton, Kenneth B.; and Silvestro, Michael J., 4,484,361, Cl. 2-24.000.
Speit, Burkhard: *See*—
Gliemeroth, Georg; Eichhorn, Uwe; Holzel, Eva; Ross, Ludwig; Krolla, Hans-Georg; Speit, Burkhard; Geiler, Volkmar; and Hoffmann, Hans-Jurgen, 4,485,178, Cl. 501-13.000.
Spence, J. Ronald, to Phillips Petroleum Company. Lubricating compositions containing normal-alkyl substituted 2-thiazoline disulfide antioxidants. 4,485,022, Cl. 252-32.70E.
Speranza, George P.; Grigsby, Robert A., Jr.; and Brennan, Michael E., to Texaco Inc. Liquid phase polyols which are alkylene oxide adducts of terephthalic esters from recycled polyethylene terephthalate. 4,485,196, Cl. 521-172.000.
Speranza, George P.: *See*—
Brennan, Michael E.; and Speranza, George P., 4,485,195, Cl. 521-167.000.
Sperry Corporation: *See*—
Kurth, Richard R., 4,485,448, Cl. 364-484.000.
Mittal, Faquir C., 4,485,429, Cl. 361-386.000.
Sperry-Sun, Inc.: *See*—
Jackson, Joshua M., 4,484,785, Cl. 308-4.00A.
Spinelli, Richard A., to Xerox Corporation. Moving platen precession system. 4,484,810, Cl. 355-8.000.
Sprague Electric Company: *See*—
Gontowski, Walter S., Jr.; and Chalfin, Edward, 4,485,301, Cl. 250-214.00A.
Sprenger, Heinz; and Scholz, Christoph, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Highly temperature-resistant, wear-resistant workpieces and method for their manufacture. 4,485,149, Cl. 428-627.000.
Sproull, Robert; and Frank, Edward H., to Carnegie-Mellon University. Testable interface circuit. 4,485,472, Cl. 371-15.000.
Squire, Edward N., to Du Pont de Nemours, E. I., and Company. Perfluorodioxole and its polymers. 4,485,250, Cl. 549-455.000.
Srackangast, James. Forming element and forming apparatus for casting manhole inverts. 4,484,724, Cl. 249-11.000.

Staehlin, John H., to Westinghouse Electric Corp. Concentric pulley drive assembly. 4,484,486, Cl. 74-96.000.

Stahlecker, Fritz; and Stahlecker, Hans. Method for manufacturing a wrapped yarn, a wrapped yarn, and an apparatus for carrying out the method. 4,484,433, Cl. 57-15.000.

Stahlecker, Hans: *See*—
Stahlecker, Fritz; and Stahlecker, Hans, 4,484,433, Cl. 57-15.000.

Stambaugh, Mark A., to Texas Instruments Incorporated. ROM coupling reduction circuitry. 4,485,460, Cl. 365-203.000.

Stamicarbon B.V.: *See*—
van der Stoel, Roland E.; Janssen, Petrus H. J.; and van de Moesdijk, Cornelis G. M., 4,485,243, Cl. 548-564.000.

Stanchev, Pejo: *See*—
Dyakov, Dobromir A.; Kodjabashev, Petko V.; Stanchev, Pejo; Kirov, Dimiter L.; Zelezov, Jivko J.; Atanassov, Atanas T.; and Yanev, Krestyu N., 4,485,451, Cl. 364-551.000.

Standard Oil Company, The: *See*—
Brazdil, James F., Jr.; Attig, Thomas G.; and Grasselli, Robert K., 4,485,079, Cl. 423-376.000.
Fox, Joseph D.; Kuhlmann, George E.; and Hundley, John G., 4,485,244, Cl. 549-245.000.

Standard Oil Company (Indiana): *See*—
Serres, Carl; and Schaffhausen, John G., 4,485,023, Cl. 252-51.50R.

Standish, William J.: *See*—
Homan, Clarke G.; Scholz, Wilfried W.; Standish, William J.; and Leiberich, Andreas, 4,485,152, Cl. 428-670.000.

Stanley, Arthur T.: *See*—
Mainiero, Joseph J.; Mainiero, Michael R.; and Stanley, Arthur T., 4,484,729, Cl. 256-1.000.

Stanley, Keith D.: *See*—
Richmond, James M.; and Stanley, Keith D., 4,485,048, Cl. 260-462.00R.

Starr, Maurice, to American Monitor Corporation. Ultra micro precision fluid metering device. 4,484,698, Cl. 222-131.000.

Stauffer Chemical Company: *See*—
James, Donald R., 4,485,053, Cl. 260-545.00R.
Sherif, Fawzy G., 4,485,190, Cl. 502-243.000.

Stecura, Stephan, to United States of America, National Aeronautics and Space Administration. Thermal barrier coating system. 4,485,151, Cl. 428-633.000.

Steel Heddle Mfg. Co.: *See*—
Kramer, Charles F.; Willard, Richard A.; and Kocher, Lawrence, 4,484,604, Cl. 139-92.000.

Steenbeck, Ulf: *See*—
Steinmetz, Guenter; Brezina, Walter; and Steenbeck, Ulf, 4,484,666, Cl. 188-165.000.

Steinberg, Norman R., to Raychem GmbH. Cable sealing. 4,485,269, Cl. 174-84.00R.

Steiner, Alois, to Sulzer-Ruti Machinery Works Ltd. Serial shed weaving machine with a weaving rotor. 4,484,603, Cl. 139-11.000.

Steiner, Dieter J.: *See*—
Schaller, Albert R.; Vetter, Werner; and Steiner, Dieter J., 4,485,278, Cl. 191-12.400.

Steiniger, Wolfgang; Bardenhagen, Dietrich; and Quarella, Guido, to Hauni-Werke Korber & Co. K.G. Distributor for a rod making machine for the production of smokers' articles. 4,484,589, Cl. 131-110.000.

Steinmetz, Guenter; Brezina, Walter; and Steenbeck, Ulf, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Electromagnetic sliding shoe brake. 4,484,666, Cl. 188-165.000.

Stempfhuber, Lorenz: *See*—
Knabel, Walter; Klubitschko, Gerd; and Stempfhuber, Lorenz, 4,484,761, Cl. 280-612.000.

Stendel, Wilhelm: *See*—
Fuchs, Rainer; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,485,252, Cl. 560-8.000.

Stephens, Richard J., to Election Data Corporation. Portable, foldable voting booth/lectern. 4,484,787, Cl. 312-239.000.

Stephens, Richard J.; and Boucher, Harry H., to Election Data Corporation. Perforating stylus. 4,485,298, Cl. 235-50.00R.

Stephenson, Colin J. S. Connector for a framework structure. 4,484,429, Cl. 52-648.000.

Sterling Drug Inc.: *See*—
Schmidt, Paul J.; and Hung, William M., 4,485,242, Cl. 548-506.000.

Stevens, James W., to Shell Oil Company. Method and apparatus for installing anodes at underwater locations on offshore platforms. 4,484,838, Cl. 405-191.000.

Stevin Construction Inc.: *See*—
van Klinken, Peter G., 4,484,835, Cl. 405-52.000.

Stichting Research en Techniek van de Katholiek Universiteit: *See*—
Leenders, Wilhelmus H. A., 4,484,712, Cl. 242-25.00R.

Stickels, Charles A.: *See*—
Kovacs, Bela V.; Nowicki, Roman M.; and Stickels, Charles A., 4,484,953, Cl. 148-3.000.

Stocker, Hans J., to AT&T Bell Laboratories. Two-step anisotropic etching process for patterning a layer without penetrating through an underlying thinner layer. 4,484,979, Cl. 156-643.000.

Stokes, Charlie M. Flexible enclosure for protecting materials or things. 4,484,420, Cl. 52-2.000.

Stonitsch, Lawrence J., to Rovanco Corp. Method of field insulating pipe joints. 4,484,386, Cl. 29-455.00R.

Stovall, James E.: *See*—
Swenson, Donald A.; Boyd, Thomas J., Jr.; Potter, James M.; and Stovall, James E., 4,485,346, Cl. 328-233.000.

Strain, David H., to Beckman Instruments, Inc. Shell type centrifuge rotor retaining ruptured tube sample. 4,484,906, Cl. 494-16.000.

Straumann, Fritz: *See*—
Sutter, Franz; Straumann, Fritz; and Raveh, Joram, 4,484,570, Cl. 128-92.00D.

Strauss, Werner; and Heintges, Siegfried, to Klockner-Humboldt-Deutz AG. Wet jigging machine for dressing coal or other minerals. 4,485,010, Cl. 209-500.000.

Streamway Corporation: *See*—
Peterson, Donald W.; and Nimon, Susan K., 4,484,600, Cl. 137-801.000.

Stuber, Michael R.: *See*—
Huhman, Michael L.; and Stuber, Michael R., 4,484,588, Cl. 130-27.0JT.

Stucke, Walter; and Glissmann, Karl-Heinz, to Mannesmann AG. Twin-nozzle extrusion head. 4,484,877, Cl. 425-113.000.

Stumphauzer, William C.: *See*—
Grise, Frederick G. J.; and Stumphauzer, William C., 4,485,297, Cl. 219-528.000.

Sturges, Robert H., Jr., to Westinghouse Electric Corp. Fuel transfer manipulator for liquid metal nuclear reactors. 4,485,067, Cl. 376-270.000.

Stutzman, Gary L.: *See*—
Gunter, Harvey R.; Stutzman, Gary L.; and Salerno, Stephen G., 4,485,217, Cl. 525-240.000.

Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG: *See*—
Kuchelmeister, Reinhold, 4,484,621, Cl. 165-67.000.

Sugano, Mamoru: *See*—
Kikumoto, Ryoji; Fukami, Harukazu; Hara, Hiroto; Ninomiya, Kunihiro; and Sugano, Mamoru, 4,485,258, Cl. 562-471.000.

Sugasawa, Fukashi; and Iizuka, Haruhiko, to Nissan Motor Company, Limited. Split type internal combustion engine. 4,484,548, Cl. 123-198.00F.

Sugitani, Yuji: *See*—
Nomura, Hirokazu; and Sugitani, Yuji, 4,485,291, Cl. 219-124.220.

Sugiyama, Akihiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Air conditioning apparatus. 4,484,454, Cl. 62-222.000.

Sugiyama, Hiroyuki; Sakurai, Masaki; Abe, Ryozo; and Yoshihara, Kenji, to Victor Company of Japan, Ltd. Rotary recording medium reproducing apparatus capable of performing high-speed search operation. 4,485,412, Cl. 358-310.000.

Sugiyama, Satoshi, to Xerox Corporation. Device for preventing substrates from jamming in a copier. 4,484,737, Cl. 271-264.000.

Sukeda, Toshiaki; Maekawa, Harumi; and Takai, Sakae, to Fujitsu Limited. Cassette-type magnetic bubble memory device. 4,485,458, Cl. 365-1.000.

Sulkowski, Eugene: *See*—
Chadha, Kailash C.; and Sulkowski, Eugene, 4,485,038, Cl. 260-112.00K.

Sullivan, Paul G.: *See*—
Licinit, Edward J.; and Sullivan, Paul G., 4,484,472, Cl. 73-204.000.

Sulzer-Ruti Machinery Works Ltd.: *See*—
Steiner, Alois, 4,484,603, Cl. 139-11.000.

Sumitani, Koji: *See*—
Onodera, Tamio; Sakai, Tokuji; Yamasaki, Yasuo; and Sumitani, Koji, 4,485,185, Cl. 502-71.000.

Sumitomo Chemical Company, Limited: *See*—
Kirino, Osamu; Hashimoto, Shunichi; Matsumoto, Hiroshi; and Oshio, Hiromichi, 4,484,942, Cl. 71-118.000.
Nagano, Eiki; Hashimoto, Shunichi; Matsumoto, Hiroshi; and Kamoshita, Katsuzo, 4,484,940, Cl. 71-96.000.
Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Matsumoto, Hiroshi; and Kamoshita, Katsuzo, 4,484,941, Cl. 71-96.000.
Shiga, Akinobu; Fukui, Yoshiharu; Sasaki, Toshio; Okawa, Masahisa; and Matsuura, Hideaki, 4,485,035, Cl. 502-115.000.
Suzukamo, Gohfu; and Fukao, Masami, 4,485,257, Cl. 562-401.000.
Terada, Yutaka; Yachigo, Shinichi; and Ishii, Tamaki, 4,485,202, Cl. 524-101.000.

Sumitomo Electric Industries, Ltd.: *See*—
Shingu, Hideo; Ishihara, Keiichi; Doi, Akira; and Fujimori, Naoji, 4,485,080, Cl. 423-446.000.

Sumitomo Metal Industries, Ltd.: *See*—
Shida, Yoshiaki; Fujikawa, Hisao; Koike, Masao; Murayama, Junichiro; and Akiyama, Shunichiro, 4,484,956, Cl. 148-12.0EA.
Takigawa, Toshiji; Sakamoto, Akira; and Takahashi, Ryuji, 4,484,443, Cl. 60-534.000.

Sumitomo Special Metals Co., Ltd.: *See*—
Higuchi, Akira; Ishigaki, Naoyuki; Matsuura, Yutaka; and Yamamoto, Hitoshi, 4,484,957, Cl. 148-31.570.

Sun Tech, Inc.: *See*—
Hsu, Chao-Yang; and Lyons, James E., 4,485,245, Cl. 549-302.000.
Lyons, James E., 4,485,246, Cl. 549-302.000.

Sunder, Shyam: *See*—
Peet, Norton P.; and Sunder, Shyam, 4,485,106, Cl. 424-250.000.

Suominen, Olli, to OY Nokia AB. Apparatus for generating a laser pulse. 4,485,482, Cl. 372-70.000.

Survival Technology, Inc.: *See*—
Sarnoff, Stanley J.; Calkins, George B.; and Lopez, Claudio, 4,484,910, Cl. 604-136.000.

Sury, Yel S.: *See*—
Krueger, Ulf A.; and Sury, Yel S., 4,485,221, Cl. 525-507.000.

Sutter, Franz; Straumann, Fritz; and Raveh, Joram, to Synthes Ltd. Device comprising an implant and screws for fastening said implant to a bone, and a device for connecting two separated pieces of bone. 4,484,570, Cl. 128-92.00D.

Suzukamo, Gohfu; and Fukao, Masami, to Sumitomo Chemical Company, Limited. Process for preparing racemized cyclopropanecarboxylic acids or their derivatives. 4,485,257, Cl. 562-401.000.

Suzuki Jidosha Kogyo Kabushiki Kaisha: *See*—
Yokoyama, Hiroshi, 4,484,549, Cl. 123-308.000.
Suzuki, Kiichi: *See*—
Sato, Hidemi; Kaneda, Aizo; Yokono, Hitoshi; Ohashi, Atsuyoshi; Miyake, Kiyohide; Kodama, Toshiro; and Suzuki, Kiichi, 4,484,796, Cl. 350-96.210.
Suzuki, Koji: *See*—
Nakahata, Kimio; Tajima, Hatsuo; Iwami, Naoki; Masuda, Shunichi; Shimizu, Katsuichi; Kawatsura, Yoshihiro; Suzuki, Koji; and Yokomizo, Yoshikazu, 4,484,811, Cl. 355-14.0CH.
Suzuki, Nobuyuki: *See*—
Kataoka, Hiroyuki; Yamada, Masanori; and Suzuki, Nobuyuki, 4,484,807, Cl. 354-415.000.
Suzuki, Saburo, to Aisin Seiki Kabushiki Kaisha. Double folding mechanism for vehicle seats. 4,484,779, Cl. 297-326.000.
Suzuki, Shigeru: *See*—
Nakayama, Shozo; Inagaki, Mitsukane; Suzuki, Shigeru; and Ban, Takashi, 4,484,869, Cl. 418-55.000.
Suzuki, Takaji: *See*—
Kohno, Hideki; Shiono, Hidemi; Sekihara, Kensuke; Yanaka, Shigenobu; and Suzuki, Takaji, 4,485,480, Cl. 378-4.000.
Suzuki, Takeomi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Focus detection with splitter lens. 4,485,303, Cl. 250-201.000.
Suzuki, Takeshi. Top roller. 4,484,786, Cl. 384-537.000.
Suzuki, Tetsumi; Murayama, Tetsuo; Ono, Hitoshi; and Aramaki, Shinji, to Mitsubishi Chemical Industries Limited. Electrophotographic hydrazone plate. 4,485,160, Cl. 430-59.000.
Suzuki, Togi; Tsunawaki, Kiyokazu; Wada, Osamu; and Kimura, Akio, to Teijin Limited. Process for producing hollow water-absorbing polyester filaments. 4,485,058, Cl. 264-49.000.
Svecia Silkscreen Maskiner AB: *See*—
Ericsson, Sylve J. D., 4,485,447, Cl. 364-469.000.
Svensson, Sten-Eric. Brake adjuster. 4,484,665, Cl. 188-79.50K.
SW Industries, Inc.: *See*—
Hamed, Parviz, 4,485,198, Cl. 523-335.000.
Swan, George A.: *See*—
Brignac, David G.; and Swan, George A., 4,485,188, Cl. 502-215.000.
Swanson, David; and Edgren, David, to ALZA Corporation. Theophylline therapy utilizing osmotic delivery. 4,484,921, Cl. 604-892.000.
Swanson, David A.: *See*—
Hunsinger, Billy J.; Merritt, Sears W.; and Swanson, David A., 4,485,363, Cl. 333-193.000.
Swanson, Kenneth R.; and Wanders, Dean E., to Aeroquip Corporation. Flexible fire protection system. 4,484,634, Cl. 169-52.000.
Swauger, Donald A. Medical device assembly holder. 4,484,913, Cl. 604-179.000.
Sweeney, William T.; Shaw, Rick L.; and Webb, Frederick A., to Conoco Inc. Method and apparatus for process control of vertical movement of slurried particulates. 4,484,861, Cl. 417-15.000.
Sweet, Robert M.: *See*—
Mahyera, Anil; Brest Van Kempen, Carel J. H.; Sweet, Robert M.; and Davidson, Amber C., 4,484,643, Cl. 175-206.000.
Swenson, Donald A.; Boyd, Thomas J., Jr.; Potter, James M.; and Stovall, James E., to United States of America, Energy. Variable-energy drift-tube linear accelerator. 4,485,346, Cl. 328-233.000.
Swift, Glen: *See*—
Hikade, Robert C.; and Swift, Glen, 4,484,596, Cl. 137-315.000.
Swithenbank, Joshua; and Taylor, David S. Flow meters. 4,484,471, Cl. 73-204.000.
Sylvan, Richard: *See*—
Ferdinand, Irwin J.; Sylvan, Richard; and Peterson, Michael, 4,484,608, Cl. 144-134.00B.
Syntex (U.S.A.) Inc.: *See*—
Nash, John E., 4,484,891, Cl. 433-116.000.
Synthes Ltd.: *See*—
Sutter, Franz; Straumann, Fritz; and Raveh, Joram, 4,484,570, Cl. 128-92.00D.
Szabo, Paul; Freeman, Daniel E.; Martin, Trevor I.; and Lennon, John M., to Xerox Corporation. Preparation of unsymmetrical diphenylamines. 4,485,260, Cl. 564-402.000.
Tabata, Youichiro; Ueguri, Shigeo; Mizuno, Takaji; Segawa, Hirohisa; and Hiramoto, Seigo, to Mitsubishi Denki Kabushiki Kaisha. Short circuit transfer arc welding machine. 4,485,293, Cl. 219-130.310.
Tabusi, Kenzi: *See*—
Furuzono, Yoshihisa; Kajiwara, Toshiyuki; Kadota, Toshiyuki; Nakano, Kazuyuki; and Tabusi, Kenzi, 4,485,132, Cl. 427-428.000.
Tachibana, Hirokazu: *See*—
Sekido, Satoshi; Tachibana, Hirokazu; and Ninomiya, Yoshito, 4,485,191, Cl. 502-303.000.
Taco Products, Inc.: *See*—
Finn, Arnold H., 4,484,893, Cl. 433-118.000.
Tadini, Giorgio: *See*—
Dagna, Giandomenico; Manini, Enrico; and Tadini, Giorgio, 4,485,386, Cl. 346-75.000.
Taeger, Tilman: *See*—
Pfleiderer, Ernst; Taeger, Tilman; and Monsheimer, Rolf, 4,484,924, Cl. 8-94.170.
Tagami, Tomoyuki: *See*—
Hattori, Shigeru; and Tagami, Tomoyuki, 4,484,651, Cl. 180-225.000.
Tajima, Hatsuo: *See*—
Nakahata, Kimio; Tajima, Hatsuo; Iwami, Naoki; Masuda, Shunichi; Shimizu, Katsuichi; Kawatsura, Yoshihiro; Suzuki, Koji; and Yokomizo, Yoshikazu, 4,484,811, Cl. 355-14.0CH.
Takada, Masami, to Nippon Electric Co., Ltd. Digital burst signal transmission system. 4,485,478, Cl. 375-60.000.
Takahashi, Hideyuki: *See*—
Ohtsuka, Sadao; Komatsu, Toshio; Kondoh, Yukio; and Takahashi, Hideyuki, 4,485,133, Cl. 428-35.000.
Takahashi, Kozi: *See*—
Niwa, Hideo; and Takahashi, Kozi, 4,485,424, Cl. 361-152.000.
Takahashi, Masayoshi: *See*—
Nomoto, Reishi; Takahashi, Masayoshi; and Ebata, Yoshikazu, 4,484,580, Cl. 128-340.000.
Takahashi, Ryuji: *See*—
Takigawa, Toshiji; Sakamoto, Akira; and Takahashi, Ryuji, 4,484,443, Cl. 60-534.000.
Takahashi, Yasuo; Fujioka, Takashi; and Nakayama, Yasuhiro, to Fuji Photo Film Co., Ltd. Photographic silver halide light-sensitive material. 4,485,170, Cl. 430-627.000.
Takai, Sakan: *See*—
Sukeda, Toshiaki; Maekawa, Harumi; and Takai, Sakan, 4,485,458, Cl. 365-1.000.
Takamiya, Kikuzo; Todoroki, Hiroshi; and Taniguchi, Shuichi, to Bridgestone Cycle Co., Ltd. Blank tube and main frame for two-wheeled vehicle. 4,484,756, Cl. 280-281.00R.
Takanashi, Tomio, to Tokyo Shibaura Denki Kabushiki Kaisha. Secondary arc extinction device. 4,485,422, Cl. 361-43.000.
Takano, Masao, to Fuji Photo Film Co., Ltd. Computed tomographic method. 4,485,481, Cl. 378-19.000.
Takano, Toshio; and Sakakiyama, Ryuzo, to Fuji Jukogyo Kabushiki Kaisha. System for controlling an electro-magnetic clutch for automobiles. 4,484,672, Cl. 192-3.560.
Takayanagi, Hiroshi, to Fuji Xerox Co., Ltd. Electrostatic charging system for electrophotographic copying machine. 4,484,812, Cl. 355-14.0CH.
Takewa, Hiroyuki; Satoh, Katsuaki; and Ishikawa, Seiichi, to Matsushita Electric Industrial Co., Ltd. Method of manufacturing a speaker diaphragm. 4,484,383, Cl. 29-169.500.
Takigawa, Toshiji; Sakamoto, Akira; and Takahashi, Ryuji, to Sumitomo Metal Industries, Ltd.; and Kayaba Kogyo Kabushiki Kaisha. Control system for superhigh pressure generation circuit. 4,484,443, Cl. 60-534.000.
Talbot, Daniel B. Amplitude modulator having substantially zero modulation distortion. 4,485,359, Cl. 332-31.00T.
Tam, Patrick S.; and Kittrell, James R., to Environmental Research and Technology Inc. Process for purifying hydrocarbonaceous oils. 4,485,007, Cl. 208-221.000.
Tamari, Nobuyuki: *See*—
Ebata, Yoshihiro; Tamari, Nobuyuki; Kinoshita, Makoto; and Toibana, Yasuo, 4,484,972, Cl. 156-325.000.
Tamashasky, Joseph A.: *See*—
Fegley, Charles R.; Regneth, Lorenz; and Tamashasky, Joseph A., 4,485,290, Cl. 219-85.0CA.
Tamura, Hiroshi: *See*—
Konoike, Takehiro; and Tamura, Hiroshi, 4,485,180, Cl. 501-135.000.
Tamura, Tetsuo, to Canon Kabushiki Kaisha. Control mechanism for a zoom lens. 4,484,800, Cl. 350-429.000.
Tan, Sing L.; van de Polder, Leendert J.; and Kremers, Theodoor M. M., to U.S. Philips Corporation. Television system for high-definition television and a television transmitter and receiver suitable therefore. 4,485,401, Cl. 358-141.000.
Tan, Yin H.; and Smith-Johannsen, Heidi, to Cetus Corporation. Isolation of human interferon by immunosorbent and high performance liquid chromatography. 4,485,017, Cl. 210-635.000.
Tanahashi, Sakae: *See*—
Maruyama, Yasuhiro; Saigo, Takaichi; Tanahashi, Sakae; and Masai, Yoshihei, 4,485,444, Cl. 364-426.000.
Tanaka, Kazuyoshi; Kato, Hisatoyo; and Matsumoto, Seiji, to Fuji Photo Film Co., Ltd. Radiation image read out device. 4,485,302, Cl. 250-327.200.
Tanaka, Kenzo: *See*—
Matsuo, Tadao; Mori, Shuji; and Tanaka, Kenzo, 4,485,213, Cl. 525-123.000.
Tanaka, Kunimaro: *See*—
Ozaki, Minoru; and Tanaka, Kunimaro, 4,485,417, Cl. 360-73.000.
Tanaka, Kunio: *See*—
Fujita, Takayuki; Yoshida, Yoshiaki; Higashiura, Toshiyuki; and Tanaka, Kunio, 4,484,693, Cl. 221-119.000.
Tanaka, Yoshikazu: *See*—
Yamamuro, Sigeaki; Hirano, Hiroyuki; Tanaka, Yoshikazu; and Morimoto, Yoshiro, 4,484,493, Cl. 74-689.000.
Tang, Chung L.; Olsson, Nils A.; and Halbout, Jean-Marc, to Cornell Research Foundation, Inc. Mode locking of travelling wave ring laser by amplitude modulation. 4,485,473, Cl. 372-18.000.
Tanger, Charles M., to Rohm and Haas Company. Process for preparing phenoxybenzoic acids. 4,485,254, Cl. 560-21.000.
Tanigawa, Takesaburo, to Asahi Diamond Industrial Co., Ltd. Diamond segmented saw blade. 4,484,560, Cl. 125-15.000.
Taniguchi, Hirotoshi. Method and apparatus for continuously treating molten metal. 4,484,731, Cl. 266-216.000.
Taniguchi, Masahiko: *See*—
Fujimura, Isao; Nakajima, Sadaaki; Abe, Morio; and Taniguchi, Masahiko, 4,485,141, Cl. 428-288.000.
Taniguchi, Nobuyuki: *See*—
Yoshiyama, Ichiro; Yuasa, Yoshio; Taniguchi, Nobuyuki; and Ishikawa, Norio, 4,485,336, Cl. 315-241.00P.

Taniguchi, Shuichi: *See*—
Takamiya, Kikuzo; Todoroki, Hiroshi; and Taniguchi, Shuichi, 4,484,756, Cl. 280-281.00R.

Tanuma, Takeshi: *See*—
Oki, Yoshitaka; and Tanuma, Takeshi, 4,484,440, Cl. 60-276.000.

Tao, Ting C.: *See*—
Cole, Larry T.; Simone, Anthony D.; and Tao, Ting C., 4,485,011, Cl. 210-96.100.

Tara GmbH: *See*—
Kellermeyer, Christian, 4,485,295, Cl. 219-221.000.

Tarancon, Gregorio, to Union Carbide Corporation. Halogenation treatmest. 4,484,954, Cl. 148-6.300.

Tartaglia, John A. Medical syringe. 4,484,915, Cl. 604-227.000.

Tateiwa, Fumikazu: *See*—
Hamasaki, Masanobu; and Tateiwa, Fumikazu, 4,485,287, Cl. 219-69.00M.

Taylor, David S.: *See*—
Swithenbank, Joshua; and Taylor, David S., 4,484,471, Cl. 73-204.000.

Taylor, Mark P.: *See*—
Brennan, John J.; Chyung, Kenneth; and Taylor, Mark P., 4,485,179, Cl. 501-32.000.

Taylor, Russell H., to International Business Machines Corporation. Device and method for determining the location and orientation of a drillhole. 4,485,453, Cl. 364-571.000.

TDK Electronics Co., Ltd.: *See*—
Imamura, Kenji; Saitoh, Hiroshi; Kakizaki, Katsuhisa; and Makino, Motohiko, 4,485,162, Cl. 430-106.600.

Teager, John C., Jr.: *See*—
Cording, Richard W.; and Teager, John C., Jr., 4,485,452, Cl. 364-565.000.

Teepak, Inc.: *See*—
Liekens, J. Alfons F.; and Hendriks, Ivo G. M., 4,484,679, Cl. 206-303.000.

Teijin Limited: *See*—
Suzuki, Togi; Tsunawaki, Kiyokazu; Wada, Osamu; and Kimura, Akio, 4,485,058, Cl. 264-49.000.

Teijin Petrochemical Industries, Ltd.: *See*—
Onodera, Tamio; Sakai, Tokuji; Yamasaki, Yasuo; and Sumitani, Koji, 4,485,185, Cl. 502-71.000.

Teknekron Infoswitch Corporation: *See*—
Miles, Larry L.; and Meyers, John D., 4,485,467, Cl. 370-14.000.

Telecommunications Radioelectriques et Telephoniques T.R.T.: *See*—
Duong, Tuan K.; Lefort, Emmanuel; and Bellanger, Maurice G., 4,485,272, Cl. 179-81.00B.

Tengler, John N.; and Pilny, James C., to Chabin Corporation. Modular electrical connector system. 4,484,792, Cl. 339-143.00R.

Terada, Yutaka; Yachigo, Shinichi; and Ishii, Tamaki, to Sumitomo Chemical Company, Limited. Isocyanuric acid ester stabilizer. 4,485,202, Cl. 524-101.000.

Teranishi, Mitsuo: *See*—
Kurosawa, Soichi; Wada, Katsuo; and Teranishi, Mitsuo, 4,484,858, Cl. 416-95.000.

Teraoka, Masanori; Komaki, Takao; and Matsumoto, Seiji, to Fuji Photo Film Co., Ltd. Radiation image recording system. 4,485,304, Cl. 250-327.200.

Terry, Ruel C., to In Situ Technology, Inc. Movable oxidizer injection point for production of coal in situ. 4,484,629, Cl. 166-259.000.

Terumo Corporation: *See*—
Ikeda, Tatsuhiko; Igarashi, Takeshi; and Shimizu, Atsushi, 4,485,171, Cl. 435-30.000.

Testa-Laboratorium A/S: *See*—
Kohnke, Ole B., 4,484,896, Cl. 434-265.000.

Tetra Pak International AB: *See*—
Andersson, Roland J. E., 4,484,977, Cl. 156-583.100.

Tetreault, Merritt D. Parts separator. 4,484,684, Cl. 209-616.000.

Texaco Inc.: *See*—
Brennan, Michael E.; and Speranza, George P., 4,485,195, Cl. 521-167.000.
Darden, Jerome W., 4,485,025, Cl. 252-75.000.
Speranza, George P.; Grigsby, Robert A., Jr.; and Brennan, Michael E., 4,485,196, Cl. 521-172.000.
Waddill, Harold G.; and Dominguez, Richard J. G., 4,485,229, Cl. 528-111.000.

Texas Instruments Incorporated: *See*—
Boone, Gary W.; and Cochran, Michael J., 4,485,455, Cl. 364-900.000.
Maher, Robert A., 4,485,383, Cl. 343-352.000.
Noble, Robert T., 4,485,376, Cl. 340-716.000.
Scott, Bentley N., 4,485,355, Cl. 331-117.0FE.
Stambaugh, Mark A., 4,485,460, Cl. 365-203.000.

Textron, Inc.: *See*—
Heubusch, Henry P., 4,484,961, Cl. 149-74.000.
Pennella, Andrew J., Jr.; Benjamin, Lawrence S.; Bergman, Adolph G.; and Jahnke, William R., 4,484,845, Cl. 409-134.000.

Thatcher Plastic Packaging, Inc.: *See*—
Burzlaff, Henry A.; and Holoubek, George H., 4,484,970, Cl. 156-233.000.

Thebault, Paul: *See*—
Fiessinger, Francois; Thebault, Paul; and Codiasse, Daniel, 4,485,018, Cl. 210-716.000.

Theeuwes, Felix: *See*—
Urquhart, John; and Theeuwes, Felix, 4,484,909, Cl. 604-82.000.

Therma-Wave, Inc.: *See*—
Rosencwaig, Allan, 4,484,820, Cl. 374-6.000.

Thillaye du Boullay, Benoit, to Institut Francais du Petrole. Device for laterally shifting a towed assembly with respect to the trajectory of a towing vehicle. 4,484,534, Cl. 114-244.000.

Thiokol Corporation: *See*—
Singer, Victor; Lushis, Donald V.; and Kirschner, Thomas J., Jr., 4,484,439, Cl. 60-230.000.

Thomas & Betts Corporation: *See*—
Dienes, Zoltan B.; and Mineur, Thomas L., 4,484,962, Cl. 156-49.000.

Thompson, Chadwick B., to W. A. Thompson & Company Limited. Leg rest hanger. 4,484,780, Cl. 297-433.000.

Thompson, Harry C., deceased (by Jacobsen, Sally L., executor), to D. H. Thompson Co. Fisherman's tool for cutting line and cleaning hooks. 4,484,368, Cl. 7-106.000.

Thompson, Paul F.: *See*—
Kammann, Karl P., Jr.; and Thompson, Paul F., 4,485,044, Cl. 260-399.000.

Thomson-CSF: *See*—
Houdart, Michel, 4,485,488, Cl. 455-327.000.
Nuzillat, Gerard; Pham Ngu, Tung; and Bert, Georges, 4,485,316, Cl. 307-446.000.
Poulain, Pierre; de Cremoux, Baudouin; and Hirtz, Pierre, 4,485,391, Cl. 357-19.000.

Three Sisters Ranch Enterprises Ptnrshp: *See*—
Bullock, Joseph J., III, 4,484,687, Cl. 215-256.000.

TI (Group Services) Limited: *See*—
Melford, David A.; and Whittington, Keith R., 4,484,615, Cl. 164-504.000.

Timoschuk, Walter. Wire drum for door. 4,484,613, Cl. 160-193.000.

Tirinen, Juha, to Yoko-team Oy. Padded glove. 4,484,359, Cl. 2-20.000.

Tiwi, Peter: *See*—
Patzold, Dieter; Schreiber, Alfons; and Tiwi, Peter, 4,484,371, Cl. 15-41.00R.
Patzold, Dieter; Schreiber, Alfons; and Tiwi, Peter, 4,484,372, Cl. 15-42.000.

Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Nomura, Takeshi; Maruyama, Kouji; Ueno, Hiroshi; Inaba, Naomi; and Yoda, Makota, 4,485,187, Cl. 502-134.000.
Ueno, Hiroshi; Kohara, Tadanao; Nomura, Takeshi; Maruyama, Kouji; Inaba, Naomi; and Yoda, Makota, 4,485,186, Cl. 502-128.000.

Tobita, Hideaki: *See*—
Kitaso, Mikio; Tobita, Hideaki; Uno, Toshio; Yamaguchi, Kyoichi; and Tsuchiya, Ichiyoshi, 4,484,467, Cl. 72-379.000.

Todoroki, Hiroshi: *See*—
Takamiya, Kikuzo; Todoroki, Hiroshi; and Taniguchi, Shuichi, 4,484,756, Cl. 280-281.00R.

Toibana, Yasuo: *See*—
Ebata, Yoshihiro; Tamari, Nobuyuki; Kinoshita, Makoto; and Toibana, Yasuo, 4,484,972, Cl. 156-325.000.

Tojiki, Hitomi: *See*—
Nobuto, Toru; Hayashi, Asao; Kambara, Koji; Tojiki, Hitomi; and Gocho, Nagahiro, 4,484,817, Cl. 356-416.000.

Tokico Ltd.: *See*—
Kato, Tetsuo, 4,484,669, Cl. 188-282.000.

Tokuda, Shoichi: *See*—
Otsuka, Saburo; Ito, Yuusuke; Yoshikawa, Toshiyuki; and Tokuda, Shoichi, 4,485,087, Cl. 424-28.000.

Tokunaga, Akio, to Japan Storage Battery Company Limited. Pasted type lead-acid battery. 4,485,156, Cl. 429-204.000.

Tokuyama, Hiroshi: *See*—
Matsubara, Makoto; Tokuyama, Hiroshi; and Watanabe, Yoshinori, 4,485,280, Cl. 200-16.00C.

Tokyo Institute of Technology: *See*—
Matsumura, Hideki, 4,485,121, Cl. 427-39.000.

Tokyo Kogaku Kikai K.K.: *See*—
Ohtomo, Fumio; and Kimura, Kazuaki, 4,484,816, Cl. 356-372.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Hashizume, Kenichi, 4,485,367, Cl. 336-57.000.
Itoyama, Masaru; and Kuze, Takashi, 4,485,263, Cl. 136-230.000.
Kawasaki, Isamu; and Hamazaki, Takakazu, 4,484,703, Cl. 228-144.000.
Kidena, Masaki; and Nishizuka, Akihiro, 4,485,432, Cl. 363-62.000.
Kimoto, Katsumi, 4,485,454, Cl. 364-900.000.
Kumamaru, Kuniaki; Hiraki, Shunichi; and Yonezawa, Toshio, 4,485,393, Cl. 357-52.000.
Kusakabe, Hiromi; and Yoshida, Yoshihiro, 4,485,312, Cl. 307-290.000.
Nagano, Katsumi, 4,485,313, Cl. 307-296.00R.
Sano, Jun, 4,485,318, Cl. 307-475.000.
Sugiyama, Akihiko, 4,484,454, Cl. 62-222.000.
Takanashi, Tomio, 4,485,422, Cl. 361-43.000.
Toyoda, Shinjiro, 4,485,456, Cl. 364-900.000.
Yamamoto, Kazuhiko, 4,485,411, Cl. 358-296.000.

Tokyo Shibaura Denki Kabushiki Kaishi: *See*—
Iwasaki, Hiroshi, 4,484,388, Cl. 29-571.000.

Tomita, Seisuke: *See*—
Fujimaki, Tatsuo; Yamada, Tomoharu; Katayama, Keiko; and Tomita, Seisuke, 4,485,205, Cl. 524-526.000.

Tomlin, Robert L.: *See*—
Laird, Daniel G.; Laird, James C.; and Tomlin, Robert L., 4,484,481, Cl. 73-863.120.

Tomsett, Derek W.: *See*—
Harris, Kenneth M.; Williams, Derek; and Tomsett, Derek W., 4,484,727, Cl. 251-77.000.

Tooson, Ronald: *See*—
Maher, Robert J.; and Tooson, Ronald, 4,484,813, Cl. 355-93.000.

Topich, James A., to NCR Corporation. Integrated circuit dual polarity high voltage multiplier for extended operating temperature range. 4,485,433, Cl. 363-60.000.

Toppan Printing Company, Ltd.: *See*—
Furuta, Haruo; Fujita, Toshiji; Yamada, Chihiko; and Nojima, Masaki, 4,485,413, Cl. 358-334.000.

Toray Industries, Inc.: *See*—
Nakayama, Takashi; Yamagata, Seiichi; and Kajita, Koji, 4,484,436, Cl. 57-328.000.

Torick, Emil L.; and Keller, Thomas B. FM Stereophonic system incorporating companding of difference signal. 4,485,483, Cl. 381-14.000.

Torin Corporation: *See*—
Lampietti, Bernard P., 4,484,499, Cl. 82-48.000.

Toshiba Ceramics, Co., Ltd.: *See*—
Inoue, Susumu; Sakashita, Isao; Meguro, Kazunori; and Hamaguchi, Kunio, 4,485,143, Cl. 428-334.000.

Toshiba Tungaloy Co., Ltd.: *See*—
Kanno, Shigeyuki; and Matsubara, Hajime, 4,484,498, Cl. 82-36.00B.

Toti, Gabriele; Guatta, Carlo; Chidini, Luciano; and Longhi, Luciano, to Alfa Romeo S.p.A. Automatic speed variator for motor vehicles. 4,484,901, Cl. 474-28.000.

Toybox Corporation: *See*—
Matsumoto, Takao; and Matsumoto, Hajime, 4,484,406, Cl. 446-487.000.

Toyo Aluminum Kabushiki Kaisha: *See*—
Uchimura, Eikichi; and Hashizume, Yoshiki, 4,484,951, Cl. 106-290.000.

Toyo Bussan Kabushiki Kaisha: *See*—
Hoshino, Takahiro, 4,485,421, Cl. 360-133.000.

Toyo Kogyo Co., Ltd.: *See*—
Okimoto, Haruo; and Matsuda, Ikuo, 4,484,556, Cl. 123-432.000.

Toyoda Koki Kabushiki Kaisha: *See*—
Yamamoto, Katsumi; Komatsu, Yuichiro; and Hamada, Ikurou, 4,484,413, Cl. 51-165.710.

Toyoda, Shinjiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Data processor with R/W memory write inhibit signal. 4,485,456, Cl. 364-900.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Kitano, Mikio; Tobita, Hideaki; Uno, Toshio; Yamaguchi, Kyoichi; and Tsuchiya, Ichiyoshi, 4,484,467, Cl. 72-379.000.
Kobayashi, Nobuyuki; Ito, Hiroshi; and Ohkawa, Nobuhisa, 4,484,552, Cl. 123-339.000.
Kobayashi, Nobuyuki; Ito, Hiroshi; and Kobashi, Mamoru, 4,484,553, Cl. 123-339.000.
Miura, Hirohisa; Satou, Hiroshi; Natsume, Toshio; and Katagiri, Hidenori, 4,484,943, Cl. 75-0.50B.
Miura, Katsuto, 4,484,555, Cl. 123-407.000.

Toyotomi Kogyo Co., Ltd.: *See*—
Nakamura, Kazuharu; and Nakanishi, Yutaka, 4,484,886, Cl. 431-201.000.

Trane Company, The: *See*—
Houser, Marion E., Jr., 4,484,452, Cl. 62-174.000.

Traulsen, Wilfried: *See*—
Goerne, Jan; and Traulsen, Wilfried, 4,485,311, Cl. 307-270.000.

Trieu, Dat S.: *See*—
Lannert, Kent P.; Shen, Chung Y.; and Trieu, Dat S., 4,485,049, Cl. 260-465.50R.

Trost, David, to Perkin-Elmer Corporation, The. Electro-magnetic alignment device. 4,485,339, Cl. 318-640.000.

Troue, Harden H., to Union Carbide Corporation. Process for producing textured coatings. 4,485,123, Cl. 427-54.100.

Tschentscher, Alfred, to FMN Schuster GmbH & Co., K.G. Thread reeling apparatus. 4,484,713, Cl. 242-43.00R.

Tseng, Chi-Ping, to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamide inner salts. 4,484,939, Cl. 71-92.000.

Tsuchiya, Ichiyoshi: *See*—
Kitano, Mikio; Tobita, Hideaki; Uno, Toshio; Yamaguchi, Kyoichi; and Tsuchiya, Ichiyoshi, 4,484,467, Cl. 72-379.000.

Tsudaka, Hideaki; Washio, Takaji; Kozuka, Nobuhiko; Iseki, Masahide; Watanabe, Toshio; Kai, Masami; Yoshiyama, Toshio; and Sakata, Hiromi, to Mita Industrial Company Limited. Copy paper feeding device for a copying apparatus. 4,484,734, Cl. 271-9.000.

Tsukada, Kiyotaka: *See*—
Enomoto, Ryo; and Tsukada, Kiyotaka, 4,485,182, Cl. 501-151.000.

Tsukahara, Toshihide: *See*—
Watanabe, Yoshikazu; Tsukahara, Toshihide; and Ota, Shozo, 4,484,967, Cl. 156-151.000.

Tsunawaki, Kiyokazu: *See*—
Suzuki, Togi; Tsunawaki, Kiyokazu; Wada, Osamu; and Kimura, Akio, 4,485,058, Cl. 264-49.000.

Tsunazawa, Yoshio: *See*—
Akiyama, Osamu; Ichikawa, Tetsuo; and Tsunazawa, Yoshio, 4,484,815, Cl. 356-325.000.

Tsuno, Nobuo, to NGK Insulators, Ltd. Metal ceramics composites and a method for producing said composites. 4,485,150, Cl. 428-633.000.

Tsuzurahara, Mamoru; and Inamura, Ichiro, to Hitachi, Ltd. Magnetron. 4,485,330, Cl. 315-39.510.

Tults, Juri, to RCA Corporation. Digital aft system which is activated during vertical retrace intervals. 4,485,404, Cl. 358-195.100.

Tunoda, Kikuo, to Ryobi Limited. Drag mechanisms of fishing spinning reels. 4,484,720, Cl. 242-218.000.

Turchi, Peter J., to United States of America, Air Force. Power circuit utilizing self-excited Hall effect switch means. 4,485,314, Cl. 307-308.000.

Ube Industries, Ltd.: *See*—
Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; Shimazaki, Hiroshi; and Isida, Tosio, 4,485,056, Cl. 264-41.000.

Uchimura, Eikichi; and Hashizume, Yoshiki, to Toyo Aluminum Kabushiki Kaisha. Aluminum flake pigment composition for paint. 4,484,951, Cl. 106-290.000.

Ueda, Yasukiyo; Murakami, Hirokuni; and Iwasa, Takashi, to Matsushita Electric Industrial Co., Ltd. Automatic temperature control device for an electric appliance such as an electric blanket. 4,485,296, Cl. 219-505.000.

Uede, Hisashi: *See*—
Kinoshita, Hiroshi; Ohba, Toshihiro; Kawaguchi, Masashi; Kanatani, Yoshiharu; and Uede, Hisashi, 4,485,379, Cl. 340-781.000.

Ueguri, Shigeo: *See*—
Tabata, Youichiro; Ueguri, Shigeo; Miruno, Takaji; Segawa, Hirohisa; and Hiramoto, Seigo, 4,485,293, Cl. 219-130.310.

Uemura, Masahiro, to Nippon Colin Co., Ltd. Method and apparatus for blood pressure measurement. 4,484,584, Cl. 128-680.000.

Ueno, Hiroshi; Kohara, Tadanao; Nomura, Takeshi; Maruyama, Kouji; Inaba, Naomi; and Yoda, Makota, to Toa Nenryo Kogyo Kabushiki Kaisha. Catalyst component for polymerization of olefins. 4,485,186, Cl. 502-128.000.

Ueno, Hiroshi: *See*—
Nomura, Takeshi; Maruyama, Kouji; Ueno, Hiroshi; Inaba, Naomi; and Yoda, Makota, 4,485,187, Cl. 502-134.000.

Uffner, William E.; and White, Robert N., to Owens-Corning Fiberglas Corporation. Chemically modified asphalts and glass fibers treated therewith. 4,485,144, Cl. 428-343.000.

Uffner, William E.: *See*—
Harrington, Edward R.; Uffner, William E.; and Janicki, Richard T., 4,485,142, Cl. 428-290.000.
Harrington, Edward R.; Uffner, William E.; and Janicki, Richard T., 4,485,145, Cl. 428-378.000.

Uldrikis, Yan R.: *See*—
Biseniex, Egils A.; Dubur, Gunar Y.; Uldrikis, Yan R.; Veveris, Maris M.; Kimenis, Agris A.; and Ivanov, Evgeny V., 4,485,239, Cl. 546-321.000.

Ulmer, Ewald R.: *See*—
Rowe, Murray A.; and Ulmer, Ewald R., 4,484,834, Cl. 404-84.000.

Ulrich, Richard D., to United States of America, Navy. Reflectometer. 4,484,819, Cl. 356-446.000.

Union Camp Corporation: *See*—
Veazey, Richard L., 4,485,233, Cl. 528-295.300.

Union Carbide Corporation: *See*—
Cohen, Alan P., 4,484,933, Cl. 55-25.000.
D'Silva, Themistocles D. J., 4,485,113, Cl. 424-304.000.
Fan, You-Ling; and Brode, George L., 4,485,209, Cl. 524-801.000.
Tarancon, Gregorio, 4,484,954, Cl. 148-6.300.
Troue, Harden H., 4,485,123, Cl. 427-54.100.

Union Oil Company of California: *See*—
Larter, Stephen R., 4,485,071, Cl. 422-78.000.
Miller, Richard B.; and Richardson, Ryden L., 4,485,183, Cl. 502-25.000.

Union Special G.m.b.H: *See*—
Norz, Wolfgang, 4,484,532, Cl. 112-2.000.

Uniroyal, Inc.: *See*—
Wefer, John M., 4,485,212, Cl. 525-64.000.

United Air Specialists, Inc.: *See*—
Darm, William J., 4,484,396, Cl. 34-36.000.
Darm, William J., 4,484,451, Cl. 62-90.000.

U. S. Natural Resources, Inc.: *See*—
Doherty, Ralph D.; and Weldon, French O., 4,484,675, Cl. 198-413.000.

United States of America
Agriculture: *See*—
Nettles, William C., Jr.; Morrison, Richard K.; Xie, Zhong-Neng; Ball, Debra; Shenkir, Cyndy A.; and Vinson, S. Bradleigh, 4,484,539, Cl. 119-1.000.
Air Force: *See*—
Bender, Gerald M., 4,485,361, Cl. 333-32.000.
Larson, George W.; Lee, William E.; and Lewis, Edward N., Jr., 4,484,722, Cl. 244-235.000.
Turchi, Peter J., 4,485,314, Cl. 307-308.000.
Army: *See*—
Campi, Morris; Farrar, Frederick; and Shames, Daniel, 4,485,362, Cl. 333-128.000.
Norkus, George E., 4,484,775, Cl. 294-88.000.
Rozniecki, Edward J., 4,484,710, Cl. 239-290.000.
Walker, Evan H.; Gibbons, Gould, Jr.; and Bowers, Gilbert A., 4,484,678, Cl. 206-3.000.
Energy: *See*—
Minati, Kurt F.; Morgan, Gerry H.; McNerney, Andrew J.; and Schauer, Felix, 4,485,266, Cl. 174-15.0CA.
Reimann, Robert C., 4,484,456, Cl. 62-476.000.
Swenson, Donald A.; Boyd, Thomas J., Jr.; Potter, James M.; and Stovall, James E., 4,485,346, Cl. 328-233.000.
National Aeronautics and Space Administration: *See*—
Stecura, Stephan, 4,485,151, Cl. 428-633.000.
Navy: *See*—
Bailey, Theodore B., 4,485,405, Cl. 358-213.000.
Chubb, Talbot A., 4,484,618, Cl. 165-1.000.
Cox, Arthur, 4,484,801, Cl. 350-441.000.

Klicker, Kenneth A.; Newnham, Robert E.; Cross, Leslie E.; and Bowen, Leslie J., 4,485,321, Cl. 310-322.000.
Smith, Rex L.; Ankeney, D. Philip; Yates, Patrick A.; Blazek, Henry F.; and Fowler, Steven E., 4,484,523, Cl. 102-202.500.
Ulrich, Richard D., 4,484,819, Cl. 356-446.000.
Willer, Rodney L., 4,485,237, Cl. 544-231.000.

U.S. Philips Corporation: *See—*
Allen, Graham; and Holbeche, Robert J., 4,485,487, Cl. 455-265.000.
Collet, Marnix G.; and van Santen, Johannes G., 4,485,315, Cl. 307-311.000.
Hellwig, Paul; and Schlagheck, Werner, 4,485,326, Cl. 313-318.000.
Howden, Harry, 4,484,798, Cl. 350-601.000.
Kinghorn, John R., 4,485,437, Cl. 364-200.000.
Schoenmakers, Johannes J. M., 4,484,719, Cl. 242-199.000.
Schoenmakers, Johannes J. M., 4,485,420, Cl. 360-130.210.
Tan, Sing L.; van de Polder, Leendert J.; and Kremers, Theodoor M. M., 4,485,401, Cl. 358-141.000.
Voorman, Johannes O., 4,485,357, Cl. 332-17.000.
Walters, Robertus A. T. J., 4,485,416, Cl. 360-74.200.

United Technologies Corporation: *See—*
Brennan, John J.; Chyung, Kenneth; and Taylor, Mark P., 4,485,179, Cl. 501-32.000.
Patacca, Angelo M., 4,484,856, Cl. 415-9.000.
Rashid, James M.; Friedrich, Leonard A.; and Freling, Melvin, 4,485,148, Cl. 428-610.000.

University College London: *See—*
Cousins, Steven J.; Jones, Keith N.; and Ackerley, Kenneth E., 4,484,778, Cl. 297-284.000.

University of California, The Regents of the: *See—*
Gough, David A., 4,484,987, Cl. 204-1.00T.

University of Pittsburgh: *See—*
Meno, Frank; and Reddy, P. S., 4,484,579, Cl. 128-305.000.

University Patents, Inc.: *See—*
Caple, Gerald; and Layton, Richard G., 4,484,409, Cl. 47-2.000.
Hruby, Victor J.; Hadley, Mac E.; and Sawyer, Tomi K., 4,485,039, Cl. 260-112.50R.

Uno, Toshio: *See—*
Kitano, Mikio; Tobita, Hideaki; Uno, Toshio; Yamaguchi, Kyoichi; and Tsuchiya, Ichiyoshi, 4,484,467, Cl. 72-379.000.

UOP Inc.: *See—*
Janikowski, Daniel S.; and Bradley, Steven A., 4,485,153, Cl. 428-688.000.
O'Hara, Mark J., 4,485,005, Cl. 208-111.000.

Uozumi, Yukio, to Kawasaki Jukogyo Kabushiki Kaisha. Switching means for guideway tracks. 4,484,526, Cl. 104-131.000.

Upjohn Company, The: *See—*
Durvasula, Visweswara R., 4,485,247, Cl. 549-310.000.

Uranium Pechiney Ugine Kuhlmann: *See—*
Maurel, Pierre, 4,485,075, Cl. 423-55.000.

Urquhart, John; and Theeuwes, Felix, to ALZA Corporation. Parenteral therapy using solid drug. 4,484,909, Cl. 604-82.000.

Ury, Michael G.; and Wood, Charles H., to Fusion Systems Corporation. Method & apparatus for cooling electrodeless lamps. 4,485,332, Cl. 315-112.000.

Ushida, Yoshiro, to NGK Spark Plug Co., Ltd. Sensor for measuring air-fuel ratio. 4,485,369, Cl. 338-34.000.

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Apilat, Vitaly Y.; Goriletsky, Valentin I.; Maximov, Vladimir G.; Mjulendorf, Oleg S.; Radkevich, Alexei V.; Chernitsky, Leonid D.; Eidelman, Lev G.; Vakulenko, Viktor Y., deceased; and Vakulenko, Raisa P., administrator, 4,485,072, Cl. 422-249.000.

Vakulenko, Viktor Y., deceased: *See—*
Apilat, Vitaly Y.; Goriletsky, Valentin I.; Maximov, Vladimir G.; Mjulendorf, Oleg S.; Radkevich, Alexei V.; Chernitsky, Leonid D.; Eidelman, Lev G.; Vakulenko, Viktor Y., deceased; and Vakulenko, Raisa P., administrator, 4,485,072, Cl. 422-249.000.

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de Valroger, Pierre, 4,485,310, Cl. 290-52.000.

Valenti, Salvatore, to Sandoz Ltd. Polymers useful for improving the fastness of dyes and optical brighteners on hydroxy group-containing substrates. 4,484,927, Cl. 8-554.000.

van de Moesdijk, Cornelis G. M.: *See—*
van der Stoel, Roland E.; Janssen, Petrus H. J.; and van de Moesdijk, Cornelis G. M., 4,485,243, Cl. 548-564.000.

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Kennis, Ludo E. J.; Vandenberk, Jan; and Mertens, Josephus C., 4,485,107, Cl. 424-251.000.

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Tan, Sing L.; van de Polder, Leendert J.; and Kremers, Theodoor M. M., 4,485,401, Cl. 358-141.000.

van der Stoel, Roland E.; Janssen, Petrus H. J.; and van de Moesdijk, Cornelis G. M., to Stamicarbon B.V. Process for the preparation of a 2-alkylpyrrole. 4,485,243, Cl. 548-564.000.

Vanek, Kenneth F.; and Dooling, Joseph S. Tamper-proof cover for the operating nut of a fire hydrant. 4,484,595, Cl. 137-296.000.

van Klinken, Peter G., to Stevin Construction Inc. Method and apparatus for installing ground-water barrier. 4,484,835, Cl. 405-52.000.

Vann, Roy R., to GEO Vann, Inc. Well completion method and apparatus. 4,484,632, Cl. 166-297.000.

van Santen, Johannes G.: *See—*
Collet, Marnix G.; and van Santen, Johannes G., 4,485,315, Cl. 307-311.000.

van Velthoven, Armand J.: *See—*
Jones, Robert K.; and van Velthoven, Armand J., 4,485,390, Cl. 357-23.000.

Varanese, Teresa E. Combination hat and cooling device. 4,484,363, Cl. 2-209.100.

Varian Associates, Inc.: *See—*
Siegel, Larry E.; Pavkovich, John M.; and Jahn, George E., 4,485,349, Cl. 330-3.000.

Varnum, Nancy C.; and Kraemer, John F., to International Minerals & Chemical Corp. Process for preparing sand cores and molds. 4,484,616, Cl. 164-520.000.

Vaynshteyn, Vladimir: *See—*
Gau, Gerald S.; and Vaynshteyn, Vladimir, 4,484,468, Cl. 73-60.000.

Veal, Christopher J.: *See—*
Rutter, Paul R.; and Veal, Christopher J., 4,484,929, Cl. 44-51.000.

Veazey, Richard L., to Union Camp Corporation. Poly(ester-amide) hot-melt adhesives. 4,485,233, Cl. 528-295.300.

VEB Werk fur Fernsehelektronik im VEB Kombinat Mikroelektronik: *See—*
Claus, Gunter; Illgner, Klaus; and Jacques, Helmut, 4,485,377, Cl. 340-719.000.

Veber, Daniel F.: *See—*
Boger, Joshua A.; and Veber, Daniel F., 4,485,099, Cl. 424-177.000.

Vecchiarelli, Francis, to Hunter Douglas International N.V. Tilting roll and tilting roll assembly for the ladder means of a venetian blind. 4,484,612, Cl. 160-177.000.

Velazquez, Herb F., to General Electric Company. Patient security and restraint system. 4,484,571, Cl. 128-134.000.

Veluswamy, Lavanga R.: *See—*
Maa, Peter S.; Veluswamy, Lavanga R.; and Vernon, Lonnie W., 4,485,008, Cl. 208-10.000.

Venger, Kurt O.: *See—*
Knodler, Dietrich; Boes, Werner; Ott, Anton; and Venger, Kurt O., 4,485,443, Cl. 364-424.100.

Venkateswaran, Kalyanasundaram, to Fairchild Camera & Instrument Corp. Redundant columns for byte wide memories. 4,485,459, Cl. 365-200.000.

Vereinigte Flugtechnische Werke GmbH: *See—*
Engel, Hinrich; and Koch, Eckhard, 4,484,846, Cl. 410-69.000.

Vernon, Lonnie W.: *See—*
Maa, Peter S.; Veluswamy, Lavanga R.; and Vernon, Lonnie W., 4,485,008, Cl. 208-10.000.

Vetter, Werner: *See—*
Schaller, Albert R.; Vetter, Werner; and Steiner, Dieter J., 4,485,278, Cl. 191-12.400.

Veveris, Maris M.: *See—*
Biseniex, Egils A.; Dubur, Gunar Y.; Uldrikis, Yan R.; Veveris, Maris M.; Kimenis, Agris A.; and Ivanov, Evgeny V., 4,485,239, Cl. 546-321.000.

Victor Company of Japan, Ltd.: *See—*
Sugiyama, Hiroyuki; Sakurai, Masaki; Abe, Ryozo; and Yoshihara, Kenji, 4,485,412, Cl. 358-310.000.

Vielstich, Gunter: *See—*
Schudlich, Kurt; Vielstich, Gunter; Muhlenbeck, Josef; Otto, Josef; Bauer, Hannsgeorg; Zollner, Dieter H.; and Rittmann, Friedrich, 4,484,897, Cl. 445-67.000.

Vilter Manufacturing Corporation: *See—*
Hikade, Robert C.; and Swift, Glen, 4,484,596, Cl. 137-315.000.

Vinal, Albert W., to International Business Machines Corporation. Complementary pole coupling magnetic head structure. 4,485,419, Cl. 360-125.000.

Vinson, S. Bradleigh: *See—*
Nettles, William C., Jr.; Morrison, Richard K.; Xie, Zhong-Neng; Ball, Debra; Shenkir, Cyndy A.; and Vinson, S. Bradleigh, 4,484,539, Cl. 119-1.000.

Visa U.S.A., Inc.: *See—*
Peirce, Roger, 4,485,300, Cl. 235-380.000.

Vivien, Jean: *See—*
Moulin, Maurice; and Vivien, Jean, 4,485,068, Cl. 376-272.000.

Vleggaar, Jan; Ostertag, Karl; and Schneider, Klaus, to Akzo nv. Apparatus for transferring heat by means of hollow filaments, and its use in various heating systems. 4,484,624, Cl. 165-172.000.

Vofsi, David: *See—*
Reich, Shymon; and Vofsi, David, 4,484,418, Cl. 51-283.00R.

Voigt, Jurgen: *See—*
Anders, Dietmar; Voigt, Jurgen; and Kruse, Heinrich, 4,484,878, Cl. 425-135.000.

Voland, Elmo W.; Adams, George W.; and Smock, Steven W., to Emhart Industries, Inc. Push to start timing mechanism. 4,485,281, Cl. 200-38.00R.

Voorman, Johannes O., to U.S. Philips Corporation. Circuit for amplitude and phase modulation of carrier signal by two respective input signals. 4,485,357, Cl. 332-17.000.

Voss, Peter: *See—*
Osburg, Dieter; and Voss, Peter, 4,484,736, Cl. 271-220.000.

W. A. Thompson & Company Limited: *See—*
Thompson, Chadwick B., 4,484,780, Cl. 297-433.000.

W. J. Savage Company: *See—*
Klingerman, Robert H., 4,484,417, Cl. 51-267.000.

W. K. Technology, Inc.: *See—*
Goldsberry, Fred L., 4,484,446, Cl. 60-647.000.

W. R. Grace & Co.: *See—*
Gibbs, David A.; Hofeldt, Robert H.; and Billings, Charles A., 4,485,192, Cl. 521-54.000.

Wachter, Elmar: *See—*
Hochstrasser, Karl; and Wachter, Elmar, 4,485,100, Cl. 424-177.000.

Wada, Katsuo: *See*—
Kurosawa, Soichi; Wada, Katsuo; and Teranishi, Mitsuo, 4,484,858, Cl. 416-95.000.

Wada, Osamu: *See*—
Suzuki, Togi; Tsunawaki, Kiyokazu; Wada, Osamu; and Kimura, Akio, 4,485,058, Cl. 264-49.000.

Waddill, Harold G.; and Dominguez, Richard J. G., to Texaco Inc. Epoxy resin containing a combination of high and low molecular weight polyoxyalkylene polyamine curing agents. 4,485,229, Cl. 528-111.000.

Wade, Jack H.: *See*—
Parks, Gary P.; and Wade, Jack H., 4,484,461, Cl. 68-142.000.

Wagner, Theodore W.: *See*—
Minch, Morris L.; and Wagner, Theodore W., 4,485,277, Cl. 179-170.0NC.

Wagner, William D.; and Sabo, Stephen C., to B. F. Goodrich Company, The. Pneumatic tire and method of making same. 4,484,965, Cl. 156-117.000.

Wahle, Gunter; and Filter, Willi, to Hauni-Werke Korber & Co. KG. Method of testing and classifying cigarettes or the like. 4,484,591, Cl. 131-280.000.

Waite, Jack P., to American Cyanamid Company. High potency, mycelial-free avoparcin alkyl sulfate complex, and method for the preparation thereof. 4,485,102, Cl. 424-181.000.

Wakefield, James R.: *See*—
Loos, Jerold C.; Wakefield, James R.; and Foster, Frederick S., 4,484,733, Cl. 270-54.000.

Walinsky, Stanley W., to Pfizer Inc. (Meth)acrylic acid/itaconic acid copolymers, their preparation and use as antiscalants. 4,485,223, Cl. 526-80.000.

Walker, Evan H.; Gibbons, Gould, Jr.; and Bowers, Gilbert A., to United States of America, Army. Ammunition rack for vehicles. 4,484,678, Cl. 206-3.000.

Wallet, Bill J.; and Casimiro, A. Robert, to Firestone Tire & Rubber Company, The. Heavy duty pneumatic tire tread. 4,484,610, Cl. 152-209.00R.

Walters, Robertus A. T. J., to U.S. Philips Corporation. Automatic reversing mechanism for a magnetic-tape apparatus. 4,485,416, Cl. 360-74.200.

Wanders, Dean E.: *See*—
Swanson, Kenneth R.; and Wanders, Dean E., 4,484,634, Cl. 169-52.000.

Wang, James C., to General Binding Corporation. Method and apparatus for making improved laminating film. 4,484,971, Cl. 156-244.140.

Warner-Lambert Company: *See*—
Carroll, Thomas J.; Feinerman, Deborah; Huzinec, Robert J.; and Piccolo, Dominic J., 4,485,118, Cl. 426-5.000.

Warren, Henry R., to RCA Corporation. Misregistration prevention in two channel VTRS. 4,485,395, Cl. 358-17.000.

Washio, Takaji: *See*—
Tsudaka, Hideaki; Washio, Takaji; Kozuka, Nobuhiko; Iseki, Masahide; Watanabe, Toshio; Kai, Masami; Yoshiyama, Toshio; and Sakata, Hiromi, 4,484,734, Cl. 271-9.000.

Watanabe, Katsunori; Ohta, Shigeto; Sakai, Kiyoshi; Ishikawa, Shozo; and Kitahara, Makoto, to Copyer Co., Ltd., Canon Inc. Laminate type electrophotographic light-sensitive material. 4,485,159, Cl. 430-58.000.

Watanabe, Masakatu: *See*—
Matsui, Kenji; and Watanabe, Masakatu, 4,485,378, Cl. 340-750.000.

Watanabe, Satoshi: *See*—
Kimura, Takeshi; Watanabe, Satoshi; Hirano, Hirofumi; and Sasaki, Setsuo, 4,484,520, Cl. 101-99.000.

Watanabe, Shojiro; Namiki, Tomizo; and Shinozaki, Fumiaki, to Fuji Photo Film Co., Ltd. Heat-sensitive recording paper. 4,485,139, Cl. 428-219.000.

Watanabe, Toshio: *See*—
Tsudaka, Hideaki; Washio, Takaji; Kozuka, Nobuhiko; Iseki, Masahide; Watanabe, Toshio; Kai, Masami; Yoshiyama, Toshio; and Sakata, Hiromi, 4,484,734, Cl. 271-9.000.

Watanabe, Yoshikazu; Tsukahara, Toshihide; and Ota, Shozo, to Mitsubishi Jukogyo Kabushiki Kaisha. Method for bonding different kinds of metals. 4,484,967, Cl. 156-151.000.

Watanabe, Yoshinori: *See*—
Matsubara, Makoto; Tokuyama, Hiroshi; and Watanabe, Yoshinori, 4,485,280, Cl. 200-16.00C.

Watson, Herman: *See*—
Sackner, Marvin A.; and Watson, Herman, 4,484,577, Cl. 128-203.280.

Wavetek International, Inc.: *See*—
Kreinbihl, Mark L.; and Miller, Robert P., 4,484,739, Cl. 272-56.50R.

Waynick, William R.: *See*—
Rowe, David W.; and Waynick, William R., 4,484,623, Cl. 165-164.000.

Weaver, Henry J., to Simmons Universal Corporation. Wedge die for producing bent plywood. 4,484,609, Cl. 144-256.100.

Webb, Frederick A.: *See*—
Sweeney, William T.; Shaw, Rick L.; and Webb, Frederick A., 4,484,861, Cl. 417-15.000.

Webb, Ronald J.; and Puhl, Larry C., to Motorola, Inc. Method and apparatus for assigning duplex radio channels and scanning duplex radio channels assigned to mobile and portable radio telephones in a cellular radiotelephone communications system. 4,485,486, Cl. 455-33.000.

Wefer, John M., to Uniroyal, Inc. Impact resistant blend of polybutylene terephthalate resin and OSA graft copolymer. 4,485,212, Cl. 525-64.000.

Weinstein, Michael A.: *See*—
Sohn, Norman; Weinstein, Michael A.; and Robbins, Richard D., 4,484,919, Cl. 604-358.000.

Weis, Alfred, to Elektro-Mechanik GmbH. Servo drive, particularly for driving output shafts of slide valves. 4,484,496, Cl. 74-804.000.

Weissenberger, Heinz, to Gebruder Pletscher. Connection coupling for the releasable attachment of an end of a first rod with a second rod. 4,484,832, Cl. 403-191.000.

Weldon, French O.: *See*—
Doherty, Ralph D.; and Weldon, French O., 4,484,675, Cl. 198-413.000.

Wells, Michael F.: *See*—
Myrmo, Erik R.; and Wells, Michael F., 4,485,438, Cl. 364-200.000.

Welty, Dennis L.; and Zobel, Don W., to Motorola, Inc. Current limiter circuit. 4,485,341, Cl. 323-315.000.

Welzel, Gerhard: *See*—
Bung, Richard; Gans, Karl; Schreyer, Gerold; and Welzel, Gerhard, 4,485,055, Cl. 264-8.000.

Wen, John W.: *See*—
Weston, Charles W.; Wen, John W.; and Mandel, Frederick S., 4,485,078, Cl. 423-320.000.

Wendel, Nikolaus; and Plener, Joachim, to Markisches Werk GmbH. Valve rotator. 4,484,544, Cl. 123-90.300.

Werner, August C., Jr., to Ralston Purina Company. Reclosable carton. 4,484,683, Cl. 206-624.000.

Werth, Dee A.: *See*—
Schildkraut, Alan L.; and Werth, Dee A., 4,484,790, Cl. 339-89.00M.

West, Joe E. Liquid inertia tool. 4,484,638, Cl. 173-90.000.

Western Company of North America, The: *See*—
Barbee, John P., Jr., 4,484,625, Cl. 166-185.000.

Westinghouse Electric Corp.: *See*—
Basnett, Robert T., 4,485,366, Cl. 335-160.000.
Byerley, Wilbur M., 4,485,069, Cl. 376-405.000.
Pebler, Alfred R.; and Charles, Robert G., 4,485,094, Cl. 427-87.000.
Staehlin, John H., 4,484,486, Cl. 74-96.000.
Sturges, Robert H., Jr., 4,485,067, Cl. 376-270.000.

Westland plc: *See*—
Cocking, Harry, 4,484,491, Cl. 74-606.00R.

Weston, Charles W.; Wen, John W.; and Mandel, Frederick S., to Agrico Chemical Company. Process for producing wet process phosphoric acid from phosphate rocks containing fluochlorapatite and related minerals. 4,485,078, Cl. 423-320.000.

Westvaco Corporation: *See*—
DeMarco, Richard E.; Hopkins, David; and Deegan, Dennis I., 4,484,715, Cl. 242-68.600.

White, Richard L. Concrete curing blanket. 4,485,137, Cl. 428-57.000.

White, Robert N.: *See*—
Uffner, William E.; and White, Robert N., 4,485,144, Cl. 428-343.000.

Whitfield, Richard G.: *See*—
Merritt, Alfred R.; Cooke, Theodore M.; Lin, An-Chung R.; and Whitfield, Richard G., 4,484,948, Cl. 106-31.000.

Whittenberg, James R.: *See*—
McGlinsky, Robert G.; Allyn, Steve; and Whittenberg, James R., 4,484,843, Cl. 406-170.000.

Whittington, Keith R.: *See*—
Melford, David A.; and Whittington, Keith R., 4,484,615, Cl. 164-504.000.

Wiatt, James G.; Calvert, James W.; Belcher, Samuel L.; and Smith, Roger D., to Cincinnati Milacron Inc. Apparatus for high rate production of biaxially oriented thermoplastic articles. 4,484,884, Cl. 425-534.000.

Wiegner, Egon, to Honeywell Elac-Nautik GmbH; and Honeywell Elac-Nautik GmbH. Transducer mounting apparatus. 4,485,462, Cl. 367-12.000.

Wiendahl, Joachim: *See*—
Reiffert, Werner; Peters, Dieter; and Wiendahl, Joachim, 4,484,598, Cl. 137-613.000.

Wienecke, Franz: *See*—
Belart, Juan; and Wienecke, Franz, 4,484,509, Cl. 91-369.00A.

Wilczewski, Robert H.; and Blomquist, James E. Transport system for a dot matrix printing mechanism. 4,484,825, Cl. 400-124.000.

Willard, Richard A.: *See*—
Kramer, Charles F.; Willard, Richard A.; and Kocher, Lawrence, 4,484,604, Cl. 139-92.000.

Willcock, Richard R., to Shell Oil Company. Method and apparatus for determining the no-flow temperature of a liquid. 4,484,821, Cl. 374-24.000.

Willer, Rodney L., to United States of America, Navy. Insensitive polynitramine compound. 4,485,237, Cl. 544-231.000.

William C. Hosie, Inc.: *See*—
Hosie, William C., 4,484,709, Cl. 239-231.000.

Williams, Derek: *See*—
Harris, Kenneth M.; Williams, Derek; and Tomsett, Derek W., 4,484,727, Cl. 251-77.000.

Williams, Floyd G., to Kybato, Inc. Horizontal drill press. 4,484,844, Cl. 408-82.000.

Williams, Fred H., to Bartz, David A. Mounting system for a video control unit. 4,484,743, Cl. 273-148.00B.

Williams, James. Mail sorting rack. 4,484,685, Cl. 209-703.000.

Williams, Joseph C.; Garmoe, Jeff P.; Biswas, Dipak R.; and Nath, Dilip K., to International Telephone and Telegraph Corporation. Method of an arrangement for coating optical fibers with metallic materials. 4,485,122, Cl. 427-45.100.

Williams, Richard B.; and Janus, Thomas V. Traveling stage. 4,484,421, Cl. 52-7.000.

Williamson, Felton, Jr., to Master Pneumatic-Detroit, Inc. Controller for vehicle retarder. 4,484,668, Cl. 188-271.000.

Wintzen, Gunther: *See*—
Groos, Horst; and Wintzen, Gunther, 4,484,466, Cl. 72-255.000.

Wipp, Gerhard: *See*—
Lunardi, Gerhard; and Wipp, Gerhard, 4,484,674, Cl. 198-332.000.

Wissink, Ronald L.; and Munsch, James A., to Rockwell International Corporation. Power transmitting device for an oil well pump. 4,484,484, Cl. 74-41.000.

Witmore, Ronald K., to AT&T Bell Laboratories. Time slot interchanger. 4,485,469, Cl. 370-68.000.

Witt, John D., to Solar Kinetics, Inc. Overheat emergency outfocus mechanism for solar energy collector. 4,484,568, Cl. 126-438.000.

Witte, Hans-Hermann, to Siemens Aktiengesellschaft. Optical star coupler and the method of making. 4,484,794, Cl. 350-96.160.

Wittmann, Erwin J.: *See*—
Fang, Ta-Fang; Wittmann, Erwin J.; Harwood, Leopold A.; and Craft, Jack, 4,485,353, Cl. 331-8.000.

Wojtowicz, Frank J. Pierogi cutler with pivoted forming tool. 4,484,390, Cl. 30-316.000.

Wolfertz, Gunter: *See*—
Appelt, Horst G.; and Wolfertz, Gunter, 4,484,379, Cl. 24-197.000.

Wong, Dennis W. Radiolabeled tumor imaging agent and method of preparation. 4,485,086, Cl. 424-1.100.

Wood, Charles H.: *See*—
Ury, Michael G.; and Wood, Charles H., 4,485,332, Cl. 315-112.000.

Woodruff, Frederick W.; and Hughey, Daniel C., to Ransburg Corporation. Fold-back power supply. 4,485,427, Cl. 361-235.000.

Woods, Harold T., to Multifastener Corporation. Method of forming sealed nut and panel assembly. 4,484,385, Cl. 29-432.200.

Woods, Milton D. Free floating fishing rig. 4,484,405, Cl. 43-4.500.

Wooten, John T.: *See*—
Easley, Othel D., Jr.; and Wooten, John T., 4,484,370, Cl. 15-95.000.

Work Right Products, Inc.: *See*—
Rystad, Arnold O., 4,484,411, Cl. 49-505.000.

Wossner, Felix: *See*—
Axthammer, Ludwig; and Wossner, Felix, 4,484,670, Cl. 18-322.191.

Wu, Wen-Pao: *See*—
Krutchen, Charles M.; and Wu, Wen-Pao, 4,485,059, Cl. 264-51.000.

Wunning, Joachim. Measuring device for the determination of the activity of carbon in furnace atmospheres. 4,485,002, Cl. 204-424.000.

Wyse, Mark R., to Bil-Jax, Inc. Portable personnel platform lift. 4,484,663, Cl. 187-9.00E.

Xerox Corporation: *See*—
Badesha, Santokh S.; and Smith, Thomas W., 4,484,945, Cl. 75-0.50A.
Sabonis, Charles J.; and Clark, Anthony W., 4,484,702, Cl. 226-74.000.
Spinelli, Richard A., 4,484,810, Cl. 355-8.000.
Sugiyama, Satoshi, 4,484,737, Cl. 271-264.000.
Szabo, Paul; Freeman, Daniel E.; Martin, Trevor I.; and Lennon, John M., 4,485,260, Cl. 564-402.000.

Xie, Zhong-Neng: *See*—
Nettles, William C., Jr.; Morrison, Richard K.; Xie, Zhong-Neng; Ball, Debra; Shenkir, Cyndy A.; and Vinson, S. Bradleigh, 4,484,539, Cl. 119-1.000.

Yachigo, Shinichi: *See*—
Terada, Yutaka; Yachigo, Shinichi; and Ishii, Tamaki, 4,485,202, Cl. 524-101.000.

Yamada, Chihiko: *See*—
Furuta, Haruo; Fujita, Toshiji; Yamada, Chihiko; and Nojima, Masaki, 4,485,413, Cl. 358-334.000.

Yamada, Masanori: *See*—
Kataoka, Hiroyuki; Yamada, Masanori; and Suzuki, Nobuyuki, 4,484,807, Cl. 354-415.000.

Yamada, Takahiro; and Okuyama, Teiji, to Aisin Seiki Kabushiki Kaisha. Steering wheel system. 4,485,371, Cl. 340-52.00R.

Yamada, Tomoharu: *See*—
Fujimaki, Tatsuo; Yamada, Tomoharu; Katayama, Keiko; and Tomita, Seisuke, 4,485,205, Cl. 524-526.000.

Yamagata, Seiichi: *See*—
Nakayama, Takashi; Yamagata, Seiichi; and Kajita, Koji, 4,484,436, Cl. 57-328.000.

Yamaguchi, Kyoichi: *See*—
Kitano, Mikio; Tobita, Hideaki; Uno, Toshio; Yamaguchi, Kyoichi; and Tauchiya, Ichiyoshi, 4,484,467, Cl. 72-379.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Isaka, Yoshiharu; and Hosoi, Yukiharu, 4,484,650, Cl. 180-219.000.

Yamakami, Yoshiaki: *See*—
Shintani, Atsunobu; Yamakami, Yoshiaki; and Hiraishi, Hisashi, 4,484,958, Cl. 148-38.000.

Yamamori, Naoki: *See*—
Yokoi, Junji; Yamamori, Naoki; and Yoshikawa, Motoyoshi, 4,485,197, Cl. 523-177.000.

Yamamoto, Hachizou: *See*—
Nakatani, Hiroshi; and Yamamoto, Hachizou, 4,485,441, Cl. 364-405.000.

Yamamoto, Hitoshi: *See*—
Higuchi, Akira; Ishigaki, Naoyuki; Matsuura, Yutaka; and Yamamoto, Hitoshi, 4,484,957, Cl. 148-31.570.

Yamamoto, Katsumi; Komatsu, Yuichiro; and Hamada, Ikurou, to Toyoda Koki Kabushiki Kaisha. Control apparatus for a grinding machine. 4,484,413, Cl. 51-165.710.

Yamamoto, Kazuhiko, to Tokyo Shibaura Denki Kabushiki Kaisha. System for deleting picture information. 4,485,411, Cl. 358-296.000.

Yamamoto, Takashi; and Kitajima, Houdo, to Murata Manufacturing Co., Ltd. Housing and mounting for a chip-like piezoelectric vibrator component. 4,485,325, Cl. 310-344.000.

Yamamoto, Tsutomu; Ashizawa, Masaaki; and Shimoda, Yutaka, to Nichias Corporation. Heat-resistant sheet gasket. 4,485,138, Cl. 428-131.000.

Yamamoto, Yoshikazu. Collapsible, portable domestic pet cage. 4,484,540, Cl. 119-19.000.

Yamamuro, Sigeaki; Hirano, Hiroyuki; Tanaka, Yoshikazu; and Morimoto, Yoshiro, to Nissan Motor Company, Limited. Cone pulley V-belt continuously variable transmission. 4,484,493, Cl. 74-689.000.

Yamasaki, Yasuo: *See*—
Onodera, Tamio; Sakai, Tokuji; Yamasaki, Yasuo; and Sumitani, Koji, 4,485,185, Cl. 502-71.000.

Yamato Scale Company, Limited: *See*—
Inoue, Shinichi, 4,484,645, Cl. 177-25.000.

Yamaue, Yasunobu: *See*—
Kato, Keizo; and Yamaue, Yasunobu, 4,484,488, Cl. 74-361.000.

Yamazaki, Etsuo: *See*—
Matsuura, Hitoshi; Yamazaki, Etsuo; and Sakurai, Hiroshi, 4,485,338, Cl. 318-569.000.

Yanaka, Shigenobu: *See*—
Kohno, Hideki; Shiono, Hidemi; Sekihara, Kensuke; Yanaka, Shigenobu; and Suzuki, Takaji, 4,485,480, Cl. 378-4.000.

Yanase, Akio: *See*—
Imamoto, Tsunehiko; and Yanase, Akio, 4,485,299, Cl. 235-377.000.

Yanev, Krestyu N.: *See*—
Dyakov, Dobromir A.; Kodjabashev, Petko V.; Stanchev, Pejo; Kirov, Dimiter L.; Zelezov, Jivko J.; Atanassov, Atanas T.; and Yanev, Krestyu N., 4,485,451, Cl. 364-551.000.

Yasuda, Eturo; Akita, Shigeyuki; and Kodera, Masao, to Nippon Soken, Inc. Ultrasonic transducer. 4,485,322, Cl. 310-332.000.

Yasunaga, Makoto: *See*—
Kurihara, Toshio; Yasunaga, Makoto; and Kunita, Masao, 4,484,519, Cl. 101-93.050.

Yates, Patrick A.: *See*—
Smith, Rex L.; Ankeney, D. Philip; Yates, Patrick A.; Blazek, Henry F.; and Fowler, Steven E., 4,484,523, Cl. 102-202.500.

Yeda Research & Development Company, Ltd.: *See*—
Reich, Shymon; and Vofsi, David, 4,484,418, Cl. 51-283.00R.

Yoda, Makota: *See*—
Nomura, Takeshi; Maruyama, Kouji; Ueno, Hiroshi; Inaba, Naomi; and Yoda, Makota, 4,485,187, Cl. 502-134.000.
Ueno, Hiroshi; Kohara, Tadanao; Nomura, Takeshi; Maruyama, Kouji; Inaba, Naomi; and Yoda, Makota, 4,485,186, Cl. 502-128.000.

Yoko-team Oy: *See*—
Tirinen, Juha, 4,484,359, Cl. 2-20.000.

Yokoi, Junji; Yamamori, Naoki; and Yoshikawa, Motoyoshi, to Nippon Paint Co., Ltd. Resinous composition and antifouling paint. 4,485,197, Cl. 523-177.000.

Yokomizo, Yoshikazu: *See*—
Nakahata, Kimio; Tajima, Hatsuo; Iwami, Naoki; Masuda, Shunichi; Shimizu, Katsuichi; Kawatsura, Yoshihiro; Suzuki, Koji; and Yokomizo, Yoshikazu, 4,484,811, Cl. 355-14.0CH.

Yokono, Hitoshi: *See*—
Sato, Hidemi; Kaneda, Aizo; Yokono, Hitoshi; Ohashi, Atsuyoshi; Miyake, Kiyohide; Kodama, Toshiro; and Suzuki, Kiichi, 4,484,796, Cl. 350-96.210.

Yokoo, Toshiaki: *See*—
Kuwano, Yukinori; Nakano, Shoichi; Yokoo, Toshiaki; and Shibata, Kenichi, 4,485,305, Cl. 250-338.000.

Yokoyama, Hiroshi, to Suzuki Jidosha Kogyo Kabushiki Kaisha. 4-Cycle internal combustion engine. 4,484,549, Cl. 123-308.000.

Yokoyama, Junichi, to Nissan Motor Company, Limited. Cooling system for automotive internal combustion engine. 4,484,541, Cl. 123-41.100.

Yonezawa, Toshio: *See*—
Kumamaru, Kuniaki; Hiraki, Shunichi; and Yonezawa, Toshio, 4,485,393, Cl. 357-52.000.

Yonezu, Kiyoshi: *See*—
Satoh, Kenji; and Yonezu, Kiyoshi, 4,485,225, Cl. 526-331.000.

Yoo, Kil-Soo, to Naewae Electric Co., Ltd. Alarm device for use in a baby's diaper. 4,484,573, Cl. 128-138.00A.

Yoshida Industry Co., Ltd.: *See*—
Hatakeyama, Yoshiharu; and Kozuka, Shinichi, 4,485,065, Cl. 264-255.000.

Yoshida, Kiyoshi: *See*—
Nakada, Akira; Okamoto, Eisaku; and Yoshida, Kiyoshi, 4,484,507, Cl. 84-1.030.

Yoshida, Ryo: *See*—
Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Matsumoto, Hiroshi; and Kamoshita, Katsuzo, 4,484,940, Cl. 71-96.000.
Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Matsumoto, Hiroshi; and Kamoshita, Katsuzo, 4,484,941, Cl. 71-96.000.

Yoshida, Yoshiaki: *See*—
Fujita, Takayuki; Yoshida, Yoshiaki; Higashiura, Toshiyuki; and Tanaka, Kunio, 4,484,693, Cl. 221-119.000.
Yoshida, Yoshihiro: *See*—
Kusakabe, Hiromi; and Yoshida, Yoshihiro, 4,485,312, Cl. 307-290.000.
Yoshiga, Kenji, to Fuji Koki Manufacturing Co., Ltd. Bimetal driven control valve. 4,484,725, Cl. 251-11.000.
Yoshihara, Kenji: *See*—
Sugiyama, Hiroyuki; Sakurai, Masaki; Abe, Ryozo; and Yoshihara, Kenji, 4,485,412, Cl. 358-310.000.
Yoshikawa, Motoyoshi: *See*—
Yokoi, Junji; Yamamori, Naoki; and Yoshikawa, Motoyoshi, 4,485,197, Cl. 523-177.000.
Yoshikawa, Toshiyuki: *See*—
Otsuka, Saburo; Ito, Yuusuke; Yoshikawa, Toshiyuki; and Tokuda, Shoichi, 4,485,087, Cl. 424-28.000.
Yoshiyama, Ichiro; Yuasa, Yoshio; Taniguchi, Nobuyuki; and Ishikawa, Norio, to Minolta Camera Kabushiki Kaisha. Electronic flash device. 4,485,336, Cl. 315-241.00P.
Yoshiyama, Toshio: *See*—
Tsudaka, Hideaki; Washio, Takaji; Kozuka, Nobuhiko; Iseki, Masahide; Watanabe, Toshio; Kai, Masami; Yoshiyama, Toshio; and Sakata, Hiromi, 4,484,734, Cl. 271-9.000.
Young, Alan H.: *See*—
Chapin, Herbert D., Jr.; Bonnescuelle de Lespinois, Pierre J.; Young, Alan H.; and Shelly, John, 4,485,398, Cl. 358-50.000.
Youngs, Wilbur R.: *See*—
Crites, Robert C.; and Youngs, Wilbur R., 4,484,427, Cl. 52-261.000.
Yu, Michael C., to Phillips Petroleum Company. Polyarylate formation by ester interchange reaction. 4,485,230, Cl. 528-125.000.
Yuasa, Yoshio: *See*—
Yoshiyama, Ichiro; Yuasa, Yoshio; Taniguchi, Nobuyuki; and Ishikawa, Norio, 4,485,336, Cl. 315-241.00P.
Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See*—
Knodler, Dietrich; Boes, Werner; Ott, Anton; and Venger, Kurt O., 4,485,443, Cl. 364-424.100.
Zajac, David C.: *See*—
Ashton, William H.; Russell, Robert S.; and Zajac, David C., 4,485,092, Cl. 424-69.000.
Zaluk, Chester S.: *See*—
Duff, Thomas G.; and Zaluk, Chester S., 4,485,440, Cl. 364-300.000.
Zampini, Anthony, to Monsanto Company. Permeation modified membrane. 4,484,935, Cl. 55-158.000.
Zaporozhsky Konstruktorskotekhnologichesky Institut Selskokhozyaistvennoco Mashinostroenia: *See*—
Erasov, Fedor N., 4,484,870, Cl. 418-61.00B.
Zaremski, Donald R.: *See*—
Bongartz, Roy C.; Johnston, Richard H.; Odasso, James J.; and Zaremski, Donald R., 4,484,996, Cl. 204-206.000.
Zaruba, John V.: *See*—
Breslow, Jeffrey D.; Zaruba, John V.; and Rosenwinkel, Donald A., 4,484,747, Cl. 273-243.000.
Zelezov, Jivko J.: *See*—
Dyakov, Dobromir A.; Kodjabashev, Petko V.; Stanchev, Pejo; Kirov, Dimiter L.; Zelezov, Jivko J.; Atanassov, Atanas T.; and Yanev, Krestyu N., 4,485,451, Cl. 364-551.000.
Zenith Electronics Corporation: *See*—
DeVries, Adrian J., 4,485,364, Cl. 333-194.000.
Zenss, Fritz. Support for mounting spectacles. 4,484,416, Cl. 51-217.00R.
Zer, Eliezer: *See*—
Gottlieb, David; and Zer, Eliezer, 4,484,851, Cl. 414-462.000.
Ziegenhorn, Joachim: *See*—
Siedel, Joachim; Neumann, Ulrich; Ziegenhorn, Joachim; Batz, Hans-George; Lenz, Helmut; Pautz, Brigitte; and Albert, Winfried, 4,485,177, Cl. 436-547.000.
Zobel, Don W.: *See*—
Welty, Dennis L.; and Zobel, Don W., 4,485,341, Cl. 323-315.000.
Zollner, Dieter H.: *See*—
Schudlich, Kurt; Vielstich, Gunter; Muhlenbeck, Josef; Otto, Josef; Bauer, Hannsgeorg; Zollner, Dieter H.; and Rittmann, Friedrich, 4,484,897, Cl. 445-67.000.
Zwick, David J., to Coleman Company, Inc., The. Hitch assembly for a single wheel trailer. 4,484,759, Cl. 280-460.00R.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF NOVEMBER, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Block, Jacob, to W. R. Grace & Co. Viscosifier and fluid loss control system. Re. 31,748, Cl. 252-8.50A.

Dimmer, Jerry R.; and Shorma, William J., to Wahpeton Canvas Company, Inc. Roll-up tarp for trailers. Re. 31,746, Cl. 296-98.000.

Flo-Pac Corporation: *See*—
Pichelman, Franklin D., Re. 31,745, Cl. 51-330.000.

Hitachi, Ltd.: *See*—
Yamashiro, Osamu, Re. 31,749, Cl. 330-264.000.

International Business Machines Corporation: *See*—
Shakib, Iraj D.; and Yosmali, Krikor, Re. 31,747, Cl. 400-637.000.

IRD Mechanalysis, Inc.: *See*—
Morrow, Robert S., Re. 31,750, Cl. 364-508.000.

Morrow, Robert S., to IRD Mechanalysis, Inc. Data acquisition system. Re. 31,750, Cl. 364-508.000.

Pichelman, Franklin D., to Flo-Pac Corporation. Composite brush. Re. 31,745, Cl. 51-330.000.

Shakib, Iraj D.; and Yosmali, Krikor, to International Business Machines Corporation. Paper feed roller assembly for a typewriter or printer. Re. 31,747, Cl. 400-637.000.

Shorma, William J.: *See*—
Dimmer, Jerry R.; and Shorma, William J., Re. 31,746, Cl. 296-98.000.

W. R. Grace & Co.: *See*—
Block, Jacob, Re. 31,748, Cl. 252-8.50A.

Wahpeton Canvas Company, Inc.: *See*—
Dimmer, Jerry R.; and Shorma, William J., Re. 31,746, Cl. 296-98.000.

Yamashiro, Osamu, to Hitachi, Ltd. Class B FET amplifier circuit. Re. 31,749, Cl. 330-264.000.

Yosmali, Krikor: *See*—
Shakib, Iraj D.; and Yosmali, Krikor, Re. 31,747, Cl. 400-637.000.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See*—
Moran, Leo R.; Leiber, Anthony A.; and Frankfort, Joel, 276,504, Cl. D9-434.000.

Akiyama, Kunio, to Sharp Corporation. Computer printer. 276,526, 11-27-84, Cl. D14-111.000.

Annexy, Jaime: *See*—
Howard, Gordon; and Annexy, Jaime, 276,508, Cl. D10-44.000.

Arimura, Takeshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Radio tuner. 276,521, 11-27-84, Cl. D14-69.000.

Bayerische Motoren Werke A.G.: *See*—
Gevert, Klaus V., 276,557, Cl. D26-34.000.

Belcher, Larry M. Naval lint removing pick. 276,561, 11-27-84, Cl. D28-9.000.

Bent, Bruce C.: *See*—
Bent, James A.; and Bent, Bruce C., 276,510, Cl. D10-109.000.

Bent, James A.; and Bent, Bruce C. Road barrier. 276,510, 11-27-84, Cl. D10-109.000.

Bezak, Sharon L., to Reliable Manufacturing Company, Inc. Combined mirror and clock. 276,505, 11-27-84, Cl. D10-2.000.

Blue Box Toy Factory Pte. Limited: *See*—
Sun, Ng C., 276,540, Cl. D21-124.000.

Bontempi, Paolo, to Comus S.p.A. Electronic organ. 276,534, 11-27-84, Cl. D17-6.000.

Breslow, Jeffrey D.; Morrison, Robert S.; and Morrison, Howard J., to Marvin Glass & Associates. Telephone. 276,520, 11-27-84, Cl. D14-64.000.

Campbell Automation, Incorporated: *See*—
Campbell, Robert L., Jr., 276,529, Cl. D15-127.000.

Campbell, Robert L., Jr., to Campbell Automation, Incorporated. Combined woodworking router and shaper machine. 276,529, 11-27-84, Cl. D15-127.000.

Cesaroni, William C., to Dart Industries Inc. Wok. 276,493, 11-27-84, Cl. D7-355.000.

Chan, Ming K. Flood light. 276,558, 11-27-84, Cl. D26-63.000.

Channel-Kor Systems Inc.: *See*—
Miller, Melvin M., 276,486, Cl. D6-471.000.

Cherry, Isaac R.: *See*—
Dekker, Frank; and Cherry, Isaac R., 276,517, Cl. D14-10.000.

Cleer, Clarence W., Jr. Water-circulating heat extractor. 276,549, 11-27-84, Cl. D23-127.000.

Clemans, Jimmy L, to Electro-Voice, Incorporated. Portable loudspeaker system. 276,518, 11-27-84, Cl. D14-33.000.

Comus S.p.A.: *See*—
Bontempi, Paolo, 276,534, Cl. D17-6.000.

Conti, Rino: *See*—
Fahey, William K.; and Conti, Rino, 276,485, Cl. D6-531.000.

Cortina, Alfredo, to Mackle Company, Inc., The. Bar cart. 276,565, 11-27-84, Cl. D34-21.000.

Dai-Ichi Seiko Co., Ltd.: *See*—
Ito, Nobuyasu; Fujino, Tadashi; and Kashiwagi, Tsutomu, 276,509, Cl. D10-97.000.

Dart Industries Inc.: *See*—
Cesaroni, William C., 276,493, Cl. D7-355.000.
Fahey, William K.; and Conti, Rino, 276,485, Cl. D6-531.000.
Leininger, Janice L., 276,564, Cl. D32-46.000.

Dekker, Frank; and Cherry, Isaac R., to Del Mar Avionics. Tape deck top and carrying case base for a tape recorder. 276,517, 11-27-84, Cl. D14-10.000.

Del Mar Avionics: *See*—
Dekker, Frank; and Cherry, Isaac R., 276,517, Cl. D14-10.000.

Designs for Vision, Inc.: *See*—
Feinbloom, Richard E., 276,531, Cl. D16-130.000.
Feinbloom, Richard E., 276,532, Cl. D16-130.000.
Feinbloom, Richard E., 276,533, Cl. D16-130.000.

Dr. Anso Zimmermann Isolierflashen: *See*—
Zimmermann, Anso, 276,490, Cl. D7-317.000.

Durand, Philippe J. Cup or similar article. 276,488, 11-27-84, Cl. D7-9.000.

Durand, Philippe J. Cup or similar article. 276,489, 11-27-84, Cl. D7-9.000.

Electro-Voice, Incorporated: *See*—
Clemans, Jimmy L, 276,518, Cl. D14-33.000.

Envall, Bjorn E. A.; and Vahlenbreder, Aribert, to Saab-Scania Aktiebolag. Side view mirror for an automobile. 276,514, 11-27-84, Cl. D12-187.000.

F.I.R. Rubinetterie S.p.A.: *See*—
Piesco, Nazzareno, 276,544, Cl. D23-31.000.

Fahey, William K.; and Conti, Rino, to Dart Industries Inc. Combined toothbrush and cup shelf or the like. 276,485, 11-27-84, Cl. D6-531.000.

Fallon, Mary C. Baby carrier. 276,478, 11-27-84, Cl. D3-31.000.

Feinbloom, Richard E., to Designs for Vision, Inc. Adjustable direct endoscopic optical coupler. 276,531, 11-27-84, Cl. D16-130.000.

Feinbloom, Richard E., to Designs for Vision, Inc. Beam splitting adjustable C-mount optical coupler. 276,532, 11-27-84, Cl. D16-130.000.

Feinbloom, Richard E., to Designs for Vision, Inc. Endoscopic adjustable optical coupler. 276,533, 11-27-84, Cl. D16-130.000.

Filtertek, Inc.: *See*—
Novak, Polly; and Touissaint, Douglas, 276,494, Cl. D8-1.000.

Flanigan, Charles D., to Microtek Storage Corporation. Magnetic data storage cartridge. 276,527, 11-27-84, Cl. D14-114.000.

Fletcher, Robert, to Paramount Pictures Corporation. Costume. 276,475, 11-27-84, Cl. D2-189.000.

Frankfort, Joel: *See*—
Moran, Leo R.; Leiber, Anthony A.; and Frankfort, Joel, 276,504, Cl. D9-434.000.

Fujino, Tadashi: *See*—
Ito, Nobuyasu; Fujino, Tadashi; and Kashiwagi, Tsutomu, 276,509, Cl. D10-97.000.

Gammelgaard, Niels; and Mathiesen, Lars, to RABO Aps. Bicycle. 276,512, 11-27-84, Cl. D12-111.000.

Gevert, Klaus V., to Bayerische Motoren Werke A.G. Combined head light fairing and instrument panel for motorcycles. 276,557, 11-27-84, Cl. D26-34.000.

Gillette Company, The: *See*—
Nigro, Louis V., 276,480, Cl. D4-127.000.

Glassman, Jacob A. Sanitary shield. 276,554, 11-27-84, Cl. D24-51.000.

Green, James T., to Superior Fiberglass, Inc. Automatic bank teller kiosk. 276,568, 11-27-84, Cl. D99-28.000.

Habro, Bertil, to Roshamn Industri AB. Reflector. 276,560, 11-27-84, Cl. D26-128.000.
Haggard, Merry: *See—*
Haggard, Robert E., 276,556, Cl. D25-77.000.
Haggard, Robert E., to Haggard, Merry. Fitting for street bollards or the like. 276,556, 11-27-84, Cl. D25-77.000.
Hand, William A. Curtain rod for use in framing furniture or the like. 276,498, 11-27-84, Cl. D8-376.000.
Handelsbolaget Johrink, Johansson & Hovbrink: *See—*
Johansson, Krister; and Hofbrink, Leif-Axel, 276,476, Cl. D2-383.000.
Harper, Alton A.: *See—*
Kramer, Joel A.; and Harper, Alton A., 276,482, Cl. D6-349.000.
Kramer, Joel A.; and Harper, Alton A., 276,484, Cl. D6-373.000.
Hashimoto, Masanori. Printer. 276,525, 11-27-84, Cl. D14-111.000.
Haworth Mfg., Inc.: *See—*
Helmholdt, Charles D., 276,481, Cl. D6-366.000.
Helmholdt, Charles D., to Haworth Mfg., Inc. Chair. 276,481, 11-27-84, Cl. D6-366.000.
Henkels, Walter. Clock. 276,506, 11-27-84, Cl. D10-23.000.
Hisey, Durward A., to Hy-C Company, Inc. Chimney cap. 276,543, 11-27-84, Cl. D23-154.000.
Hitachi, Ltd.: *See—*
Kouno, Shuichi; Nishiwaki, Katsuhiko; and Watanabe, Kenichi, 276,550, Cl. D23-155.000.
Hobrough, Gilbert L.; Hobrough, Theodore B.; and Lowndes, Colin. Loudspeaker housing. 276,519, 11-27-84, Cl. D14-33.000.
Hobrough, Theodore B.: *See—*
Hobrough, Gilbert L.; Hobrough, Theodore B.; and Lowndes, Colin, 276,519, Cl. D14-33.000.
Hofbrink, Leif-Axel: *See—*
Johansson, Krister; and Hofbrink, Leif-Axel, 276,476, Cl. D2-383.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Yaguchi, Tadahiro, 276,515, Cl. D13-1.000.
Honsa, Horst L. A., to Sun Metal Products, Inc. Combined wheel and tire. 276,513, 11-27-84, Cl. D12-135.000.
Horie, Hideyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Original feeder for copying machine. 276,530, 11-27-84, Cl. D16-32.000.
Howard, Gordon; and Annexy, Jaime, to International Licensing Associates. Decorative desk timer. 276,508, 11-27-84, Cl. D10-44.000.
Hy-C Company, Inc.: *See—*
Hisey, Durward A., 276,543, Cl. D23-154.000.
Imamura, Yuji, to Tokai Metals Co., Ltd. Packing container. 276,502, 11-27-84, Cl. D9-416.000.
Imanishi Kinzoku Kogyo Kabushiki Kaisha: *See—*
Nishikawa, Hideo, 276,547, Cl. D23-123.000.
Okamoto, Kenzo; Sakai, Hiroichi; Kitada, Fumihiko; and Kimura, Hideharu, 276,546, Cl. D23-121.000.
Okamoto, Kenzo; Sakai, Hiroichi; Kitada, Fumihiko; and Kimura, Hideharu, 276,548, Cl. D23-123.000.
Inoue, Kiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Television receiver. 276,522, 11-27-84, Cl. D14-80.000.
International Licensing Associates: *See—*
Howard, Gordon; and Annexy, Jaime, 276,508, Cl. D10-44.000.
Ito, Nobuyasu; Fujino, Tadashi; and Kashiwagi, Tsutomu, to Dai-ichi Seiko Co., Ltd. Counter. 276,509, 11-27-84, Cl. D10-97.000.
Ito, Shiro: *See—*
Miyazaki, Kunio; and Ito, Shiro, 276,541, Cl. D21-134.000.
Johansson, Krister; and Hofbrink, Leif-Axel, to Handelsbolaget Johrink, Johansson & Hovbrink. Emergency bag for sanitary articles. 276,476, 11-27-84, Cl. D2-383.000.
Kabushiki Kaisha Matsuzaka Tokkosho (MCC Corporation): *See—*
Yokoyama, Takashi, 276,496, Cl. D8-52.000.
Kadota, Toshihiko, to Olympus Optical Co., Ltd. Tape recorder. 276,516, 11-27-84, Cl. D14-6.000.
Kamada, Kazuo; Nozawa, Takamitsu; and Onoda, Yuko, to Sapporo Breweries Limited. Beverage container. 276,499, 11-27-84, Cl. D9-325.000.
Kanzaka, Yoshihiro, to Yoshida Kogyo K.K. Buckle for belts or the like. 276,477, 11-27-84, Cl. D2-414.000.
Kao, Bill C. J. Cushion. 276,487, 11-27-84, Cl. D6-596.000.
Kashiwagi, Tsutomu: *See—*
Ito, Nobuyasu; Fujino, Tadashi; and Kashiwagi, Tsutomu, 276,509, Cl. D10-97.000.
Kiam, Victor K., II; and Mockovak, Robert A. Electric dry shaver. 276,563, 11-27-84, Cl. D28-50.000.
Kimura, Hideharu: *See—*
Okamoto, Kenzo; Sakai, Hiroichi; Kitada, Fumihiko; and Kimura, Hideharu, 276,546, Cl. D23-121.000.
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ISSUED NOVEMBER 27, 1984

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19 4,484,640
61 4,484,641
65 4,484,642
206 4,484,643
410 4,484,644

CLASS 177

25 4,484,645

CLASS 179

2 E 4,485,270
19 4,485,271
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81 R 4,485,273
90 BD 4,485,274
115.5 H 4,485,275
157 4,485,276
170 NC 4,485,277

CLASS 180

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210 4,484,648
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225 4,484,651
227 4,484,652
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121 4,484,657
150 4,484,658
266 4,484,659

CLASS 182

187 4,484,660

CLASS 184

106 4,484,661

CLASS 186

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CLASS 187

9 E 4,484,663
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CLASS 188

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218 A 4,484,667
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CLASS 191

12.4 4,485,278

CLASS 192

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CLASS 194

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CLASS 198

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413 4,484,675
718 4,484,676
735 4,484,677

CLASS 200

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16 C 4,485,280
38 R 4,485,281
51 R 4,485,282
144 R 4,485,283

CLASS 203

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4,484,984
4,484,985
4,484,986

CLASS 204

1 T 4,484,987
35.1 4,484,988
59 R 4,484,989
106 4,484,990
129 4,484,991
157.1 R 4,484,992
158 HA 4,484,993
181 C 4,484,994
192 M 4,484,995
206 4,484,996
243 R 4,484,997
257 4,484,998
290 R 4,484,999
298 4,485,000
408 4,485,001
424 4,485,002

CLASS 206

3 4,484,678
303 4,484,679
455 4,484,680
499 4,484,681
545 4,484,682
624 4,484,683

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4,485,008
111 4,485,005
112 4,485,004
216 R 4,485,006
221 4,485,007

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500 4,485,010
616 4,484,684
703 4,484,685

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96.1 4,485,011
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455 4,485,015
632 4,485,016
635 4,485,017
716 4,485,018

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CLASS 215

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CLASS 217

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CLASS 219

10.55 D 4,485,285
10.55 R 4,485,284
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69 W 4,485,288
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90 4,485,289
123 4,485,292
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130.31 4,485,293
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221 4,485,295
505 4,485,296
528 4,485,297

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197 4,484,694

CLASS 222

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64 4,484,696
95 4,484,697
131 4,484,698

CLASS 224

42.21 4,484,699
161 4,484,700
273 4,484,701

CLASS 226

74 4,484,702

CLASS 228

144 4,484,703
180 A 4,484,704

CLASS 232

39 4,484,705

CLASS 235

50 R 4,485,298
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380 4,485,300

CLASS 238

349 4,484,706

CLASS 239

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290 4,484,710
460 4,484,711

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96 4,484,717
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218 4,484,720

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461.1 4,485,308
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8.6 4,485,019
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75 4,485,025
78.1 4,485,026
90 4,485,027
99 4,485,028
106 4,485,029
108 4,485,030
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315.4 4,485,033
403 4,485,034
522 R 4,485,036
546 4,485,037

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CLASS 260

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112.5 R 4,485,039
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380 4,485,043
399 4,485,044
403 4,485,045
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465 G 4,485,050
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545 R 4,485,053

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171 4,485,062
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CLASS 271

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226 4,484,772

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270 4,485,067
272 4,485,068
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CLASS 378

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19 4,485,481

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92 4,485,484

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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